



UNIVERSITY OF  
**PATRAS**  
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

DEPARTMENT OF PHARMACY

SCHOOL OF HEALTH SCIENCES

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

COURSE TITLE: MICROBIOLOGY  
CODE: PHA-COS-14

**MICROBIOLOGY  
COURSE OUTLINE**

**1. GENERAL**

<b>SCHOOL</b>	HEALTH SCIENCES		
<b>ACADEMIC UNIT</b>	DEPARTMENT OF PHARMACY		
<b>PARTICIPATING INSTITUTIONS</b>	-		
<b>TITLE of POSTGRADUATE PROGRAM</b>	COSMETOLOGY - PREPARATION AND EVALUATION OF COSMETIC PRODUCTS		
<b>LEVEL</b>	POSTGRADUATE		
<b>COURSE CODE</b>	PHA-COS-14	<b>SEMESTER</b>	A'
<b>COURSE TITLE</b>	MICROBIOLOGY		
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Courses	3	6	
<b>COURSE TYPE</b>	Field of Science		
<b>PREREQUISITE COURSES</b>	None		
<b>LANGUAGE of INSTRUCTION and EXAMINATIONS</b>	Greek		
<b>COURSE OFFERED to ERASMUS STUDENTS</b>	No		
<b>COURSE (URL)</b>	<a href="http://www.pharmacy.upatras.gr/images/DS/PHA-COS-14_EN.pdf">http://www.pharmacy.upatras.gr/images/DS/PHA-COS-14_EN.pdf</a>		

**2. LEARNING OUTCOMES**

<b>Learning Outcomes</b>
By the end of this course the student will be able to know <ol style="list-style-type: none"> <li>1. the principles of detection and counting of microorganisms, as well as the microbiological limits in various categories of cosmetic products.</li> <li>2. the guidelines for risk assessment and identification of microbiologically low risk products and evaluate the antimicrobial protection of a cosmetic product.</li> <li>3. the guidelines for the application of ISO standards for cosmetic microbiology</li> </ol>
<b>General Competences</b>
By the end of this course the student will, furthermore, have develop the following general abilities (from the list above): <p><i>Decision making</i></p> <p><i>Autonomous (Independent) work</i></p> <p><i>Group work</i></p>

### 3. SYLLABUS

#### LECTURES

- Evaluation of the antimicrobial protection of a cosmetic product
- General instructions for microbiological examination
- Microbiological limits
- Detection of microorganisms
- Counting of yeasts and fungi
- Counting and detection of aerobic mesophilic bacteria
- Detection of Escherichia coli
- Detection of Pseudomonas aeruginosa
- Detection of Staphylococcus aureus
- Microbiological controls of impregnated or coated products - wipes and masks
- Guidelines for the application of ISO standards for cosmetic microbiology
- Guidelines for risk assessment and identification of microbiologically low risk products

### 4. TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b>	In the classroom	
<b>USE of INFORMATION and COMMUNICATIONS TECHNOLOGY</b>	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.	
<b>TEACHING METHODS</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures	60
	Literature study	50
	Assignment – Presentation of a relevant topic from the international literature	40
	<b>Course Total (25 hours of work-load per ECTS credit)</b>	<b>150</b>
<b>STUDENT PERFORMANCE EVALUATION</b>	Language of Evaluation: Greek	
	1. Written final exam (80%) which includes	
	<ul style="list-style-type: none"> <li>• Short development questions</li> <li>• Critical thinking Questions</li> </ul>	
	2. Assignment – Compilation of Cosmetic Product Information File (20%)	

## 5. RECOMMENDED BIBLIOGRAPHY

1. Cosmetic Microbiology, a Practical Approach, 2nd Edition, Philip A. Geis Ed. Taylor & Francis Group New York, London, 2006
2. K. M. Burleson and B. M. Martinez-Vaz, Microbes in Mascara: Hypothesis-Driven Research in a Nonmajor Biology Lab, *Journal Of Microbiology & Biology Education*, December 2011, p. 166-175
3. Hyo Jung Lee, Sang Eun Jeong, Soyoun Lee<sup>3</sup>, Sungwoo Kim, Hyuntak Han, Che Ok Jeon, Effects of cosmetics on the skin microbiome of facial cheeks with different hydration levels, *Microbiology-Open*. 2018;7:e557, DOI 10.1002/mbo3.557
4. Zeitoun et al. Microbiological testing of pharmaceuticals and cosmetics in Egypt, *BMC Microbiology* (2015) 15:275, DOI 10.1186/s12866-015-0609-z