COURSE OUTLINE

(1) GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	5031-5032	**SEMESTER**	5
COURSE TITLE	**DERMATO- COSMETIC SCIENCE II**		

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, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Theory	6 (3 Theory+3 Lab)	7
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specific Courses (SC)
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	THEORY-LAB https://eclass.uniwa.gr/main/portfolio.php https://eclass.uniwa.gr/courses/BISC277/

(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 aim of the course Dermato-Cosmetic Science II which is an extension of the course Dermato-Cosmetic Science I is for students to understand and be able to develop and produce effective cosmetic products for personal skin care and hygiene. Emphasis is given on development of sunscreen products intended to protect the skin from ultraviolet radiation (UV) and the possible formation of tumors and immunosuppression, on antiperspirants-deodorants, baby care products, make-up products, hair products, oral and hygiene products.

The goal of the course is for students to belong the necessary knowledge for the formulation and method of production of cosmetics for face care, body care, oral care, hair care and hygiene care with modern bioactive substances.

Learning outcomes
After the end of the course students will be able to know:

- To understand and explain the mechanisms of action of the sunscreen filters (physical and chemical) incorporated in the sunscreen products for the protection of skin from the ultraviolet A and B solar radiation and the possible creation of neoplasms and immunosuppression.
- To be able to produce sunscreen products of different SPF and types (creams, emulsions, oils)
- To know the mechanism and develop the self-tanning products
- To develop after sun products.
- To develop single-phase and two-phases solids and liquids intended for make-up skin care.
- To know and develop solid cosmetic forms consisted of of powders and granules for make- up skin care.
- To know the action of the new functional ingredients of hair care products according to the principles of hair biology.
- To produce hair care products.
- To know the principles of perfumery.
- To understand the physicochemical properties and mechanism of action of antiperspirants and deodorants and develop such products in different cosmetic types.
- To know the dispersions of gases in solids or liquids and their applications in Cosmetic science and Dermatology.
- To develop advanced formulations for baby care according to European legislation.
- To produce products for of oral care.
- To produce products for hygiene.
- To produce medical devices products for skin care.

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

Working independently, team work, working in an interdisciplinary environment, working in an international environment, Search for, analysis and synthesis of data and information, with the use of the necessary technology, Production of new research ideas, Production of free, creative and inductive thinking

(3) SYLLABUS

Theoretical Part of the Course

1. *Clay materials in cosmetic science and their effect on the biophysical parameters of the skin. Hydrogels - Hydrocolloid products for skin care and cleansing. Natural-synthetic colloids.*
   Natural and synthetic polymers in skin care.
2. *Sunscreen products for protection from UVA and UVB radiation. Sun Protection Factor (SPF). Mechanism of action of organic sunscreens. Effect of excipients on the λmax of sunscreens. Effect of excipients on the efficacy of sunscreen products.*
3. *Ultraviolet radiation. Benefits and harmful consequences. Direct action of ultraviolet radiation on the skin and action through free radicals. Oxidative stress.*
4. *Inorganic (natural) sunscreens:*
   a) Conventional mechanisms of action. Effect on the rheological properties of the product, interaction with the excipients. Advantages-disadvantages.
   b) Micro-fine natural filters and mechanisms of action. Interaction with excipients. Advantages disadvantages.
5. *Water resistant sunscreen products. Photo protective substances. Possible transdermal absorption of sunscreens. Concerns, Legislation and modern formulation.*
6. *Protocols and Efficacy studies for SPF (UVA,UVB). In-vitro, in- vivo measurement of SPF.*
7. *Artificial tanning products-Mechanisms of action - tanning promoters.*
8. *Make-up skin products: Suspension of solid dyes in single-phase and two-phase systems. Hot casting. Cosmetic product forms to cover skin imperfections-make-up (emulsion, sticks, foam-packaging under pressure).*
9. *Make-up Lip balm products: Lipstick sticks, indelible and overlay lipsticks, lip polishes-high viscosity lip glosses. Perfumes and dyes for mucous products intended for the mucous membranes - Restrictions.*
10. *Make-up Eyeshadow products (eye shadows, eye pencils, eyebrows, mascara). Pigments for make-up products intended for the eye area - Restrictions.*
11. *Insect repellent products. Physicochemical properties and efficacy of their components. Precautions-Legislation.*
12. *Alpha and beta hydroxy acid products (AHA, BHA). Categories α- and β-hydroxy-acids-chemical properties-Efficacy. Incorporation and formulation in cosmetic products.*
13. *Antiperspirants. Deodorant products. Mechanisms of action of antiperspirants and deodorants. Aluminum Derivatives-Limitations.*
14. *Aromatic products-Essential oils.*
15. *Foams-Gas dispersions in liquid or solid. Production methods of Foam. Surfactants, Polymers used for foam formation. Foam density, Foam stabilization.*
16. *Basic principles of hair biology. Hair coloring. Colors of plant origin. Chemical classification of synthetic dyes-coupling reagents. Risks-Limitations. Semi-permanent and permanent hair coloring compositions. Use of Computational Chemistry to develop new dyes. Hair straightening products. Hair discoloration products.*

17. *Products for topical application for the strengthening of scalp hair growth. Eyelash strengthening products. Hair removal products. Thioglycolic acid salts and their action on the hair keratin and keratin layer. Enzymes to remove hair growth.*
18. *Nail care-coloring products. Chemical classification of pigments. Physicochemical properties of plasticizers-solvents for the nail color layer. Artificial ultraviolet radiation in the nail coloring layer and nails- Possible risk.*
19. *Baby and children's cosmetic products. Specific features of the baby skin barrier (pH, lipids). Personal care and hygiene products for babies. Powders. Excipients, Emulsions, Creams, Suspensions, Hazard substances. Percutaneous absorption. Baby wipes for cleaning. Baby and children's sunscreen products and restrictions.*
20. *Oral hygiene products. Medical devices products. Active substances for toothpastes and mouthwashes. Toothpastes: thixotropic properties, abrasive ingredients, Relative Dental Abrasion (RDA), effect of fluoride compounds on enamel, antibacterial agents-limitations. Legislation. Whitening toothpastes. Herbal toothpastes.*

Laboratory part of the Course

1. *Aluminum-Silicate compounds for skin cleansing. Clay cleansing paste. Production. Physicochemical Properties. Efficacy-Safety.*
2. *Synthetic colloids for skin cleansing. Production of colloidal mask with synthetic colloids-Physicochemical properties. Efficacy-Safety.*
3. *Single-phase solid oily systems in make-up lip care products: Lipstick stick Production-Molding a) indelible and b) coating.*
4. *Single-phase oily systems with different rheological properties in Make-up lip care products: Shaping lip glosses: a) low viscosity liquid b) high viscosity liquid and c) pomade.*
5. *Hot casting method for the formation of liquid make-up in the type of powder. Incorporation of microspheres.*
6. *Solid cosmetic forms of powders and granules. Compaction of powder mixtures. Dry granulation: a) Formation of compressed face powder and b) Formation of compressed eye shadow.*
7. *Two-phase systems for make-up of eyelashes: a) Production of o/w mascara emulsion b) Production of o/w emulsion-solvent.*
8. *Liquid single-phase cleanser for the eye area. Formation-Stability.*
9. *Sunscreen face cream with SPF 30 (UVA-UVB) protection with:*
   a) organic sunscreens and b) coated micro-fine inorganic sunscreen particles. Development-Physicochemical properties-Stability.
10. *"Water resistant" Sunscreen body emulsion with the use of water repellents. Development-Physicochemical properties. Stability.*
11. *Skin care products: development of cream with incorporation of α-hydroxy acids 5% and 10% w/w. Physicochemical properties-Stability.*
12. *Scalp cleansers: a) Anti-dandruff shampoo- Development-Stability b) Sebum-regulating shampoo c) Shampoo for dryness d) Shampoo for normal hair. Formulation-Physicochemical properties-Stability.*
13. *Hair care products for styling and conditioning: Formulation:*
    a) Conditioner (low viscosity emulsion) with cationic surfactants. b) Mask (high viscosity emulsion) with a mixture of surfactants and nourishing agents.
    c) Fixative gel with synthetic polymer.
14. *Deodorant and antiperspirant products: Production of different cosmetic types*
    a) emulsion of suitable viscosity for roll-on packaging. b) Deodorant sticks.
15. *Development of aromatic products.*
    a) Eau De Toilette-Cologne b) After shaving products (lotion)

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, Support of the learning process through e-class for the theoretical and laboratory part, videos of lectures pf the course ynder the auspices of the Institution, Exercises through e-class.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *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*	*Activity* / *Semester workload* Lecture: 80 Group independent laboratory work-presentation and processing of experimental results: 50 Independent study: 70 Educational visit: 10 Course total: *210*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *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* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**FINAL WRITTEN EXAMINATION** *Theoretical Part* *Written exams:* Multiple choice questionnaires, open-ended questions, characterization of sentences as true or false, problem solving, complete of answers. (100%) *Laboratory Part* *Written exams in the laboratory exercise of the day. (50%)* *Written exams: Multiple choice questionnaires, open-ended questions, characterization of sentences as true or false, problem solving, complete of answers. (50%)*

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography :

1. Τσιρίβας Ε, Βαρβαρέσου Α. Σημειώσεις «Δερματοκοσμητολογίας ΙΙ», Τμήμα Βιοϊατρικών Επιστημών, Πανεπιστήμιο Δυτικής Αττικής, 2019.
2. Τσιρίβας Ε., Βαρβαρέσου Α. Παπαγεωργίου Σ. «Εφαρμοσμένη Κοσμητολογία-Δερμοκαλλυντικά», ISBN:978-960-583-151-6.ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2016.
3. Τσιρίβας Ε., Βαρβαρέσου Α. Εργαστηριακές Ασκήσεις «Δερματοκοσμητολογίας ΙΙ», Τμήμα Βιοϊατρικών Επιστημών, Πανεπιστήμιο Δυτικής Αττικής, 2019.
4. Sunscreens: Regulations and Commercial Development, 3rd Edition, Nadim Shaath, ISBN-13: 978-0824757946
5. Harry's Cosmeticology 9th Edition. Meyer R. Rosen.
6. Barone S. J., Cohen I. D. and Sclossman M. L., J Cosm Sci, Monograph no 8, Lipstick Technology.
7. Lim H. W. and Draelos Z.D. Clinical Guide to Sunscreens and Photoprotection ISBN-13: 978-1420080841, Informa, 2008.
8. Schlossman M. L. The Chemistry and Manufacture of Cosmetics. Vol 1 Basic Science ISBN-13:

978-1932633474 4th edition, USA, 2008
9. Shaath N. A. The Encyclopedia of Ultraviolet filters. ISBN-13: 978-1932633252, Allured Publishing Co., 2007.
10. http://ec.europa.eu/consumers/cosmetics/cosing/

- Related academic journals:

International Journal of Cosmetic Sciences
Journal of Cosmetic Dermatology
Journal of Investigative Dermatology
Journal of Dermatological Science
Cosmetics
Journal of Cosmetic Science
Pharmaceutics
Antioxidants