

ANATOMY, PATHOPHYSIOLOGY AND SKIN HYGIENE (CSU014)

1. language

Italiano.

2. course contents

Coordinator: Prof. CALVIELLO GABRIELLA

Year Course: Second

Second Semester: Second

UFC: 13

Modules and lecturers:

- **Anatomy and Physiology of the Skin** (CSU015) - 5 Cfu - Ssd Med/35

Prof. Cristina Guerriero

- **General Pathophysiology** (CSU018) - 1 Cfu - Ssd Med/04

Prof. Gabriella Calviello

- **General and Applied Hygiene** (CSU016) - 2 Cfu - Ssd Med/42

Prof. Stefania Bruno

- **Microbiology and Clinical Microbiology** (CSU019) - 2 Cfu - Ssd Med/07

Prof. Francesca Bugli

- **General Pathology** (CSU017) - 3 Cfu - Ssd Med/04

Prof. Gabriella Calviello

3. BIBLIOGRAPHY

Anatomy and Physiology of the Skin

L. Celleno, Dermatologia Cosmetologica. Tecniche Nuove Editore, 2008.

General and Applied Hygiene

W. Ricciardi et al., Igiene Medicina Preventiva Sanità Pubblica, Idelson-Gnocchi Editore, 2013.

General Pathology -General Pathophysiology

M Parola – Patologia generale ed Elementi di Fisiopatologia. II Edizione, EdiSES, 2020.

S.R. Lakhani et al., Le basi della patologia generale, Casa Editrice Ambrosiana, 2020

Microbiology and Clinical Microbiology

The bibliography will be indicated by the teacher during the lessons.

It is necessary for the students to have one of the indicated textbooks for: **General and Applied Hygiene, Anatomy and Physiology of the Skin, General Pathology** and **General Pathophysiology** among those recommended or another textbook, after teachers' approval.

4. LEARNING OBJECTIVES

Knowledge and understanding: (Dublin 1): By the end of the Course, the students will acquire the knowledge of:

-concepts of health and disease in general terms. Concepts of epidemiology and etiology of the disease in general terms. The risk factors, with particular attention to: a) effect of age, lifestyle, and prevention; b) the main human pathogenic microorganisms and the infective diseases, with particular attention to those affecting the skin and mucosa, and the essential elements relative to the specific laboratory diagnoses.

- the mechanisms underlying the development of disease in general, degenerative reactive and neoplastic processes; the cellular mechanisms underlying the physiologic and pathologic immune response; the physiopathology of some organs and systems, with particular attention to the main skin disorders, and to the pathologies of special interest in cosmetology, as well as to the main mechanisms related to the development of pathologies induced by cosmetics. Modern methods for the evaluation of the skin characteristics and the activities of the cosmetic products.

Applying knowledge and understanding – (Dublin 2): By the end of the Course the students will be able to apply the acquired knowledge to:

-understand how the basic pathologic process can mediate the passage from cell and tissue damage to the disease, especially referring to skin pathologies.

-understand how microorganisms can cause very different skin alterations and how complicated is the diagnosis based essentially on the clinical observation without the support of adequate microbiologic tests.

- understand how the health determinants can affect population health, from both the qualitative and quantitative standpoints.

Making judgements - (Dublin 3): By the end of the course the students will be able to integrate the knowledge and acquired competence on risk factors, epidemiologic data, laboratory parameters, signs and symptoms, as well as morphologic and functional alterations, particularly referring to the skin system.

Communication skills (Dublin 4): By the end of the course the students will know how to communicate what they have learned by using an adequate and specific terminology, whereby they can clearly express concepts both to experts and non-experts.

Learning skills (Dublin 5) - By the end of the course, based on the teachers' indications, students will develop better study skills and strategies aimed at multi-source, self-directed and ongoing learning. In particular, they will gain the capacity to deepen and update their knowledge by capitalizing on bibliographic searches and on use of web-based electronic databases.

5. prerequisites

Key prerequisites include the knowledge of the fundamentals of Physics, General and Organic Chemistry, Biochemistry, Anatomy, Histology, Biology and Physiology.

6. TEACHING METHODS

The Course will be taught through:

-Interactive frontal lectures by using slides and films as teaching tools. Bibliography of illustrations/table and texts not taken from the textbook, will be indicated. Useful links will be suggested to help students to find additional materials and become able to undertake the following steps in their study career with a higher degree of autonomy. During the lessons there will be a constant active engagement of the students through questions on the treated topics. Moreover, the students will be invited to freely ask questions to obtain clarifications. The constant teacher-students dialogue will allow a better achievement of adequate knowledge, easily and independently communication skills and ability to make judgments.

Teaching methods - (Dublin 1): The teaching methods described above will allow the students to achieve an adequate knowledge that makes them able to understand how:

-the basal pathological processes can: a) alter the functions of the organs and systems and mediate the passage from the damage occurring in cells and tissues to the development of complex diseases.

-microorganisms can induce a wide variety of skin manifestations, and how specific microbiologic

tests play a critical role in the diagnosis of the implicated diseases.

-health determinants can affect population health, from both a qualitative and a quantitative standpoint.

Applying knowledge and understanding - (Dublin 2): The teaching methods described above allow the students to understand how the etiological agents may trigger the basic pathological processes, which, in turn, may alter the functions of organs and systems, as well as mediate the passage from cell and tissue damage to the disease. Moreover, the students will be able to understand the health phenomena and evaluate the prevention measures through indicators and association measures.

Making judgements - (Dublin 3): The teaching methods described above allow the students to be able to independently identify the pathological process and disease manifestations as well as the associations between risk factors and diseases.

Communication skills - (Dublin 4) The level of interaction obtained by using these teaching methods will allow the students to clearly communicate the knowledge and the personal judgments both to experts and non-experts.

Learning skills - (Dublin 5): By the end of the course the students, thanks to the indications of the teachers, as well as the formal and practical lessons attended, the students will be able to develop skills and strategies aimed at multi-source and self-directed learning. Moreover, they will gain the capacity to deepen and update their knowledge by capitalizing on bibliographic searches and on use of web-based electronic databases.

7. OTHER INFORMATIONS

Continuous feedback is provided to students during classes, at intervals and at the end of each lesson. Teachers are available for consultation by e-mail or in person upon appointment.

8. METHODS FOR VERIFYING LEARNING AND FOR EVALUATION

Students will be evaluated through an exam consisting of:

-A preliminary written exam on the teaching activity provided in the *General and Applied Hygiene* module and consisting of 20 multiple choice questions with only one correct answer, out of the five provided. The modulation of the questions allows to evaluate how much the student was able to understand (**Understanding skills - Dublin 1**), apply the knowledge and skills provided by the Course (**Applied understanding skills - Dublin 2**). The exam is not passed if the student does not answer correctly to at least 10 questions out of the 20. The percentage of correct questions is then calculated and a formula for calculating the grade out of thirty (Linear Scale Formula) is applied to it. The formula itself determines the attribution of the maximum grade (30/30) with laude if a percentage of 95% of correct answers is performed, and 18/30 with a percentage of 51%. Laude has to be confirmed after the following oral exam. Only if sufficiency (18/30) is achieved in the written test, will the student be admitted to the second oral test.

-A second oral exam consisting of:

at least two questions for each of the following modules:

- Anatomia e Fisiopatologia della cute,*
- General pathology,*
- *Microbiology and Clinical Microbiology,*

and at least a question for the *General Pathophysiology* module.

The questions of the oral exam will allow the teachers to comprehend if the students:

have achieved the knowledge and competence according to the objectives detailed above

(Knowledge and understanding: Dublin 1-Applying knowledge and understanding: Dublin 2.

are able to integrate the acquired knowledge and competences by organizing in a transversal way what they have learned during the Course for each single topic (**Making judgements: Dublin 3).**

clearly communicate using a correct terminology (**Communication skills: Dublin 4):**

have deepened and updated their knowledge by capitalizing on bibliographic searches and use of web-based electronic databases (**Learning skills: Dublin 5) -**

Altogether, the maximal score (30/30) can be obtained if the students had obtained a score of at least 25/30 in the first written test and in the case the students show to possess all the requisites described above (**Dublin 1-5)** at the maximal degree in the oral exam. All the scores obtained (in the written test and in the oral exam) will be considered to formulate the final score.

It will be possible to obtain the *laudem* by the students that are able to expose the topics with absolute precision, self-confidence and excellence in the oral exam. The agreement of the entire Examination Board is required as well.

9. program

Anatomy and Physiology of the Skin: Cutaneous system: Anatomic and physiological considerations of skin and its appendages. Surface hydrolipidic film. Collagen, Elastin, Ground substance (Extracellular Matrix). Sebum. Eccrine and apocrine sweat. Basic skin lesions. Seborrhea: Anatomic and pathologic basis of seborrhea. Hormonal influence and skin microflora. Seborrhea epidemiology. Dermatologic and cosmetologic therapy of seborrhea. Clinical aspect of skin seborrhea and of the scalp. Evaluation methods for seborrhea. Seborrhea evolution towards acne. Etiopathogenesis. Acne: clinical aspects and therapy. Sun and skin: outlines of the physics of solar radiation. Biological activities of solar radiations. Ionizing effect and free radicals. Systems for protection from solar radiations in skin. Tanning. Melanocytic system: individual and ethnic differences. Clinical effects of solar radiation on the skin: Photoaging and photocarcinogenesis. Prevention of solar radiation-induced damage. Cosmetologic and dermatologic therapies of the damage induced by photo exposition. Skin aging non-photoinduced. Aging: biological problems of aging. Wrinkles and other pathologic signs related to skin aging.

General and Applied Hygiene: Basic Concepts: Hygiene, public health, health and disease. Health Determinants. Prevention: definition, description of the interventions and timing of prevention. Communicable and not communicable diseases: definitions and natural history. Definition of Risk. Risk factors and etiological agents. Occurrence and Risk Measures. Descriptive, constructive, and experimental epidemiology. Descriptive, constructive, and experimental epidemiological studies. The indicators and the health status. Health according to age: from conception to neonatal age, the first years of life, the school age, the working age, and the society (lifestyles: smoking and alcoholism and youth discomfort, infectious diseases and travel abroad), the old age. Health education: role of health education and its evolution, health education and possible tools.

General Pathology: -Introduction to the Course. The concept of health, homeostasis and disease, etiology, and pathogenesis -Etiology: classification and characteristics of the main endogenous and environmental pathogens. Genetic and epigenetic basis of diseases. Cellular Pathology: Mechanisms of cellular injury and cellular response to it. Cellular adaptation. Degenerative diseases, intracellular accumulations. Biological bases of cellular aging. Cellular death. Inflammation. Acute inflammation. Vascular and cellular reaction, cellular migration, phagocytosis. Chemical mediators of inflammation. Exudate: composition, functions and development. Abscess. Tissue repair, wound healing, fibrosis. Chronic inflammation. Immunology and Immunopathology: humoral and cellular immune response. Hypersensitivity. Introduction to Autoimmunity. Introduction to immunodeficiencies. Tumors: classifications and biologic characteristic of cancer cells. Metastasis. Carcinogenic agents. Oncogenes and tumor suppressor genes.

General Pathophysiology:

Cardiovascular pathophysiology: arteriosclerosis and atherosclerosis; thrombosis; embolism; infarction. Pathophysiology of thermoregulation: fever. Blood pathophysiology: anemia. Pathophysiology of metabolism: Diabetes Mellitus. Liver pathophysiology. Pathogenic mechanisms of smoke- and alcohol- related diseases

Microbiology and Clinical Microbiology:

Hints on the history of Microbiology. Bacterial cells, cell wall Gram+ e Gram-. Fundamentals of bacterial genetics, Streptococci and Staphylococci. Hints on bacteriologic diagnosis. Hints on skin microbiota: homeostasis and dysbiosis. General characteristics of viruses: virus structure and morphology. Viral nucleic acid. Virus classification. Phasis of viral infections. Hints on virus diagnostics. Virus-host interactions, Herpes virus, Papillomavirus, SARS Cov-2. Mycetes: generalities on and classification, mycosis. Aspergillus and Candida. Dermatophytes and skin myosis. Parasitology: general concepts and main human parasites