NAME OF THE SUBJECT: PATHOPHYSIOLOGY

<table>
<thead>
<tr>
<th>MODULE</th>
<th>CONTENT</th>
<th>YEAR</th>
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<tr>
<td>Medicine and Pharmacology</td>
<td>Pathophysiology</td>
<td>3rd</td>
<td>1st</td>
<td>6 ECTS</td>
<td>Required (Mandatory)</td>
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**LECTURER(S)**

- Mª Inmaculada López Aliaga
- Magdalena López Frías
- Mariano José Mañas Almendros
- Emilio Martínez de Victoria Muñoz
- Miguel Moreno Prieto

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**DEGREE WITHIN THE SUBJECT IS TAUGHT**

**TUTORING AND MEETINGS**

- Mª Inmaculada López Aliaga
  - T, and Th 12.30-14.30 and W 10.30-12.30

- Magdalena López Frías:
  - First semester: M 10.30-14.30 and W 10.30-12.30
  - Second semester: M 10.30-14.30 and T 12.30-14.30

- Mariano José Mañas Almendros:
  - M, W and F 9.30-11.30

- Emilio Martínez de Victoria Muñoz:
  - M, W and F 9.30-11.30

- Miguel Moreno Prieto
  - First semester: M, W and F 10.30-12.30
  - Second semester: T and Th, 11.30-13.30 and W 10.30-12.30

**PREREQUISITES and/or RECOMMENDATIONS (if necessary)**

**Prerequisites:** those necessary to access to the degree, related with the level of formation that the student must acquire to accede to the University.

**Recommendations:** to have previous basic knowledge of Chemistry, Biophysics, Physical Chemistry, Biology, Anatomy and Histology, Biochemistry (I and II), Cellular and Human Physiology (I and II).

A good standard of English and informatics skills are also required.
BRIEF ACCOUNT OF THE SUBJECT PROGRAMME

General aspects of pathophysiology. Dysfunction and disorders of the musculoskeletal system, cardiovascular system, respiratory system, gastrointestinal system, renal system, nervous system, and hormonal systems.

GENERAL AND PARTICULAR ABILITIES

CG9. Take part in health promotion and disease prevention activities at the individual, familiar and community level with an integral point of view of the health-disease process.

CG13. Develop verbal and written communication skills to interact with faculty, staff, peers, patients, and other health professionals. Promote working and cooperation skills within multidisciplinary teams and those related with other health care professionals.

CG15. Be aware of personal limitations and the need to maintain and actualize the professional competency, with special emphasis to self-learning of new knowledge based on available scientific evidence.

CE47. Be familiar with and comprehend the structure and function of human body as well as the general mechanisms of disease, molecular, structural and functional alterations, syndrome expression, and therapeutic strategies to restore health and wellness.

OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)

At the completion of the course the student should be able to:

- Describe the functional alterations in specialized organs and tissues that are responsible for disorders that involve these organs, as well as the etiopathogenic mechanism involved in the alterations, and the symptomatology of each disease.
- Describe the adequate response of human body against the modifications exerted by agents causing internal or external injury.
- Comprehend the concepts of health and disease.
- Comprehend the pathophysiological substrate of disease.
- Comprehend the activity of different drugs on the organism in order to avoid the appearance of side effects induced by pharmacological treatments and be more efficient at the design of new drugs.
- Describe the compensatory mechanism to maintain system homeostasis under pathological conditions.
- Relate these concepts with previous knowledge and acquire the scientific base for more elaborate posterior knowledge.

DETAILED SUBJECT TOPICS

THEMATIC UNIT I: INTRODUCTION AND GENERAL PATHOPHYSIOLOGY
Module 1: Normal and pathologic function (1H)
Module 2: Cellular responses to stress and toxic insults. Alterations in cell physiology I: Apoptosis and ageing (1H)
Module 3: Cellular responses to stress and toxic insults. Alterations in cell physiology II: Necrosis and environmental diseases (1H)
Module 4: Acute and chronic inflammation (1H)

THEMATIC UNIT II: SYSTEMIC PATHOPHYSIOLOGY. THE NERVOUS SYSTEM
Module 5: Pathophysiology of sensory function (1H)
Module 6: Pathophysiology of peripheral, medular and brain stem alterations. Pathophysiology of the upper and lower motor neuron (1H)
Module 7: Pathophysiology of motor coordination (1H)
Module 8: Pathophysiology of basal ganglia. (1H)
Module 9: Pathophysiology of Autonomic Nervous System, Mood alterations. (1H)
Module 10: Pathophysiology of cerebral cortex. (1H)
Module 11: Alterations of consciousness, epilepsies, and sleeping disorders (1H)

**THEMATIC UNIT III: MUSCULOSKELETAL SYSTEM**
Module 12: Pathophysiology of muscle. (1H)
Module 13: Pathophysiology of bone. (1H)
Module 14: Pathophysiology of joints. (1H)

**THEMATIC UNIT IV: ENDOCRINE SYSTEM**
Module 15: Pathophysiology of growth. Alterations of the hypothalamic-pituitary axis (1H)
Module 16: Pathophysiology of Thyroid gland. Goiter. Hyperfunction, hypofunction. (1H)
Module 17: Alterations in calcium and phosphate metabolism. (1H)
Module 18: Alterations of suprarrenal cortex function. (1H)
Module 19: Alterations of glucidic and lipídic metabolism. (1H)
Module 20: Alterations of protein and amino acid metabolism. (1H)

**THEMATIC UNIT V: BLOOD**
Module 21: Pathophysiology of Erythrocytes.
Module 22: Pathophysiology of Leukocytes.
Module 23: Pathophysiology of hemostasis and thrombosis.

**THEMATIC UNIT VI: CARDIOVASCULAR SYSTEM**
Module 24: Pathophysiology of valve malfunction. Valvular heart disease. (1H)
Module 25: Pathophysiology of heart bit rate and rhythm disorders. Cardiac arrhythmia (1H)
Module 26: Pathophysiology of coronary circulation. (1H)
Module 27: Pathophysiology of arterial blood pressure. (1H)
Module 28: Cardiac insufficiency. Pathophysiology of the pericardium. (1H)
Module 29: Acute circulatory failure. (1H)
Module 30: Pathophysiology of peripheral vascular system. (1H)

**THEMATIC UNIT VII: RESPIRATORY SYSTEM**
Module 31: Respiratory failure I: Classifications. Symptomatology. Obstructive lung disease. (1H)
Module 32: Respiratory failure II. Restrictive lung disease. (1H)
Module 33: Pathophysiology of pulmonary circulation. (1H)
Module 34: Alterations of respiratory rhythm and pattern. (1H)

**THEMATIC UNIT VIII: RENAL SYSTEM**
Module 35: Alterations of glomerular and tubular functions. (1H)
Module 36: Acute and Chronic renal failure. (1H)
Module 37: Pathophysiology of urinary tract. (1H)
Module 38: Acid-base metabolism disorders. (1H)

**THEMATIC UNIT IX: DIGESTIVE SYSTEM**
Module 39: Disorders of gastrointestinal motility/transt. (1H)
Module 40: Disorders of gastric and intestinal secretions. (1H)
Module 41: Symptomatology of digestive pathology. (1H)
Module 42: Syndromes of gastrointestinal tract pathology. (1H)
Module 43: Syndromes of liver, biliary tract and pancreas pathology. (1H)
THEMATIC UNIT X: REPRODUCTIVE SYSTEM
Module 44: Alterations in sex differentiation and development. (1 H)
Module 45: Disorders of testicular function. (0.5 H)
Module 46: Disorders of ovary function. (0.5 H)

PRACTICAL LABORATORY CLASSES
Group work sessions in the laboratory supervised by the lecturer. Meaningful construction of knowledge through interaction and student activity. Assistance is required. Students will use a pathophysiology laboratory notebook provided by the Department of Physiology in which they will annotate the results and complete the different exercises and problems proposed. Upon completion of the practical laboratory classes, the laboratory notebook will be evaluated by the instructor and it will count as part of the practical laboratory grade.

The practical classes at the laboratory will be taught as follows:

Practical session 2. Pathophysiology of digestive system. Pathophysiology cases: Lactose intolerance, bile acid deficiency, peptic ulcer.
Practical session 4. Pathophysiology of endocrine system. Carbohydrate and lipid metabolism.

SYSTEM FOR ASSESSING THE ACQUISITION OF THE COMPETENCES AND KNOWLEDGE

I. Continuous assessment during the course
This method is voluntary. The students who want to improve their final evaluation shall perform all activities proposed by the lecturer during the course as well as participate actively in them.

- The lecturer will not evaluate a student who is not properly involved in the proposed activities.

- The methodological work will be carried out according to schedule:
  - Classroom presentation of a selected topic
  - Questions answered correctly in class
  - Attendance to theoretical classes and seminars (group preparation of readings, essays, problem solving, seminars) to be presented or submitted in theoretical lectures, practical and/or small-group tutoring sessions.

II. Final evaluation
Includes one midterm and one final exam required by law. They will be conducted in two sessions during the course. In any of them, this test will have different values depending on the student has participated or not in the progressive assessment. For those students who have participated on continuous assessment, final exam will account only 70% of final grade. The remaining 30% will come from the activities of continuous assessment carried out during the course: attendance to theoretical classes, dissertations in class, meetings and final evaluation of practical laboratory classes. If the student does not participate in all the continuous assessment, the final exam will be worth 90%, therefore the maximum qualification that a student will get with this kind of exam will be a 9/10. The practical evaluation will consist on the exam about the contents of the pathophysiology laboratory notebook provided by the Department of Physiology. This exam will be worth up to 10%. The maximum qualification will be 1/10. In this case, the final qualification will be the addition of theoretical and practical grades.
## BIBLIOGRAPHY

### Print Books on Physiology

### RECOMMENDED INTERNET LINKS

[http://www.ugr.es/local/fisioaai](http://www.ugr.es/local/fisioaai)