

**COURSE DATA****Data Subject**

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|----------------------|-------------------------------------|
| Code | 34481 |
| Name | Pathology of the respiratory system |
| Cycle | Grade |
| ECTS Credits | 6.0 |
| Academic year | 2021 - 2022 |

Study (s)

| Degree | Center | Acad. year | Period |
|---------------------------|------------------------------------|-------------------|---------------|
| 1204 - Degree in Medicine | Faculty of Medicine and Odontology | 4 | Second term |

Subject-matter

| Degree | Subject-matter | Character |
|---------------------------|----------------------------------|------------------|
| 1204 - Degree in Medicine | 14 - Human clinical training III | Obligatory |

Coordination

| Name | Department |
|-------------------------|-------------------|
| GUIJARRO JORGE, RICARDO | 40 - Surgery |
| JUAN SAMPER, GUSTAVO | 260 - Medicine |

SUMMARY

The general objectives are: to train professionals in the area of the respiratory system, with theoretical and practical knowledge, attitudes and skills that make the student capable to solve and guide the medical and surgical situations of the respiratory pathology. Thus, theoretical lessons, seminars, skills classroom practices and clinical practices will be used in order to boost the practical aspects of the teaching.

PREVIOUS KNOWLEDGE**Relationship to other subjects of the same degree**

There are no specified enrollment restrictions with other subjects of the curriculum.



Other requirements

To course this subject, it is advisable to have passed the subject General pathology and semiology.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1204 - Degree in Medicine

- Obtain and elaborate a clinical history with relevant information.
- Perform a physical examination and a mental health assessment.
- Have the capacity to make an initial diagnosis and establish a reasonable strategy of diagnosis.
- Establish the diagnosis, prognosis and treatment, applying principles based on the best information available and on conditions of clinical safety.
- Indicate the most accurate therapy in acute and chronic processes prevailing, as well as for terminally ill patients.
- Plan and propose appropriate preventive measures for each clinical situation.
- Acquire proper clinical experience in hospitals, health care centres and other health institutions, under supervision, as well as basic knowledge of clinical management focused on the patient and the correct use of tests, medicines and other resources available in the health care system.
- Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- Understand the importance and the limitations of scientific thinking in the study, prevention and management of diseases.
- Organizar y planificar adecuadamente la carga de trabajo y el tiempo en las actividades profesionales.
- Capacidad para trabajar en equipo y para relacionarse con otras personas del mismo o distinto ámbito profesional.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.
- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- Recognises, diagnoses, and guides the management of the pathologies affecting the respiratory system.
- Knows how to perform a complete anamnesis, focused on the patient and orientated to various pathologies, interpreting its meaning.



- Knows how to evaluate modifications in clinical parameters at different ages.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

1. To acquire knowledge of the main clinical symptoms which involve the respiratory system pathologies.
2. To acquire attitude and skills to develop a proper and right action in the respiratory pathology.
3. To acquire the ability to identify and treat the respiratory pathology.

DESCRIPTION OF CONTENTS

1. Respiratory insufficiency. General concepts.

- To know with clarity the concept of respiratory insufficiency.
- To know the mechanisms of production and classification.
- To describe the effects of the respiratory insufficiency.
- To know how to perform the diagnosis of the respiratory insufficiency.
- To know the general treatment focused on the respiratory insufficiency.

2. Respiratory insufficiency: types and characteristics.

- To know the concept and types of global respiratory insufficiency.
 - Extrapulmonary or with normal lungs.
 - With pathological lungs.
- To know the concept and types of partial respiratory insufficiency.
 - In the chronic respiratory disease.
 - In the localized acute pulmonary diseases.
 - In the diffuse acute pulmonary diseases.

3. Syndrome of sleep apnea.

- To know the physiological respiratory changes which are produced during sleep.
- To describe the concept of central apnea during sleep, mechanism of production and clinical situations where it takes place.
- To Describe the concept of obstructive sleep apnea, prevalence and clinical importance, mechanism of production, diagnosis and treatment.



4. Bronchial asthma. Concept, pathogenesis, physiopathology and forms of presentation.

Asthma pathogenesis.

Ways of presentation.

5. Bronchial asthma. Clinical and treatment management.

Diagnostic methods and criteria.

Treatment of the stable situation and of the re-acuteity.

6. Chronic obstructive pulmonary disease. Concept, pathogenesis, physiopathology and forms of presentation.

Phenotypes of the chronic obstructive pulmonary disease.

Pathogenic mechanisms.

Importance of smoking.

Physiopathology of the disease.

7. Chronic obstructive pulmonary disease. Clinical management and treatment.

Pharmacological, rehabilitation.

Treatment of the re-acuteity and of the stable situation.

8. Bronchiectasis and cystic fibrosis

To know the definition and types of bronchiectasis.

To know the specific causes of bronchiectasis.

To know the treatment, focusing on the physiotherapy and the use of antibiotic.

To know the genetic, pathogenesis, diagnosis and treatment of the cystic fibrosis.

9. Acute tracheobronchitis. Upper airway.

To describe the acute obstruction of the upper airway: causes and clinical presentation.

To describe the chronic obstruction of the upper airway.

Clinical, radiological and functional alterations (variable and fix intra and extra-thoracic).

To know the acute inflammatory pathology of the upper airway: common cold. Acute bronchitis.

Cough management



10. Community acquired and nosocomial pneumonias. Forms of presentation, physiopathology, main agents.

To know the concept of pneumonia and its epidemiological transcendence.
To know the pneumonia pathogenesis.
To know the types of pneumonia: according its germs and presentation.

11. Community acquired and nosocomial pneumonias. Clinical management and treatment.

To know the clinical management of the patient with pneumonia.
To know the treatment patterns according the type of pneumonia.

12. Pulmonary tuberculosis.

To know the etiology of the tuberculosis.
Epidemiology.
Natural history of the disease.
Pathogenesis.
Clinical manifestations, diagnosis and treatment.

13. Pleural effusion.

To know the concept of pleural effusion.
Types and characteristics.
Natural history of the disease.
Techniques.
To know the most frequent pleural effusions.

14. Pathology of the pulmonary circulation.

To know the concept of pulmonary hypertension, its types and its pathogenesis.
To describe the Pulmonary Arterial Hypertension (PAH) and the one associated with other pathologies.
To known the possibilities of treatment.

15. Venous thromboembolic pulmonary disease.

To know the concept of the deep vein thrombosis: its pathogenesis, diagnostic methods, prevention and treatment.
To know the concept and the clinical importance of the acute pulmonary embolism.
To describe the acute pulmonary embolism diagnosis. Clinic and complementary techniques. Decision trees. Commentaries according the resources availability.
To know the possibilities and indications of the treatment.



16. Interstitial pathology. Pulmonary fibrosis. Sarcoidosis.

To explain the concept of disease of the interstice or diffuse or pulmonary fibrosis.
To know the classification of this group of diseases.
Diagnostic procedure and types.
Clinic and treatment of the sarcoidosis.

17. Occupational lung diseases. Hypersensitivity pneumonitis

To know the characteristics of the occupational diseases:
Importance of the exposition measurement.
To know the clinical, functional and radiological study.
To know the main occupational diseases.
To know the diagnosis and treatment of hypersensitivity pneumonitis and pulmonary eosinophilia

18. Pleura surgical pathology.

To specify the role of the thoracoscopy in the diagnosis of pleural effusions of unknown etiology.
To describe the concept, bases and indications of the pleurodesis in the metastatic pleural effusions.
To define the concept of pleural empyema.
To describe the physiopathology of the pleural empyema.
To delimit the diagnostic systematic in the pleural empyema, with special reference to the biochemical analysis of the pleural fluid.
To determine the indications of the pleural drainage in the treatment of the pleural empyema, as well as current criteria to indicate an endopleural fibrinolysis and the surgical treatment.
To define the concept of chylothorax, pointing the diagnostic criteria.
To enumerate its main causes.
To point different therapeutic options and their application according the evolution of the chylothorax.
To indicate the relative frequency of the primitive pleural tumours in relation with other metastatic ones.
To differentiate the histopathological characteristics of the different pleural tumours.
To describe the clinical and radiological peculiarities which allow suspecting the diagnosis of the localized pleural mesotheliomas.
To name the etiological factors of the malignant mesothelioma.
To describe its symptoms and radiological signs.
To refer the diagnostic and therapeutic possibilities in the pleural mesotheliomas.

19. Lung cancer

To describe the epidemiology, etiology, clinic, diagnosis staging and surgical indications of the bronchogenic carcinoma (BC).
To justify the importance of the BC study using current epidemiological data.
To establish the relation between tobacco and BC.
To enumerate other risk factors of modifiable and non-modifiable BC.
To name the most important histological types of BC and to point the most important clinical characteristics.



To refer the symptoms and signs that can trigger a BC both due to their local extension and their metastasis and paraneoplastic manifestations.

To plan the diagnostic protocol of a patient in clinical suspicion of BC.

To distinguish between resectability and operability pointing the criteria of both.

To perform a TNM staging and decide, based on it, a therapeutic attitude.

To define the therapeutic strategy in the undifferentiated carcinoma of small cells.

To establish the prognosis of a BC according the evolutionary stage.

To define the technical bases of the BC surgical treatment.

20. Pneumothorax

To define the concept of pneumothorax.

To enumerate the different etiological types of pneumothorax.

To enunciate the concept of primary spontaneous pneumothorax.

To know the physiopathology of the spontaneous pneumothorax.

To apply an approach of clinical and diagnostic study in the spontaneous pneumothorax.

To know how to recognize it in a thorax radiography.

To decide the treatment to be followed in the pneumothorax, with special emphasis in the primary spontaneous pneumothorax pointing the indication of pleural and surgical drainage.

To know the treatment and surgical indications in the secondary spontaneous pneumothorax.

To explain the technical bases of surgical treatment of pneumothorax.

To be able to perform a clinical and diagnostic study about the emphysema from the surgical point of view.

To precise the surgical indications and contraindications of the pulmonary emphysema and to describe the technical bases of this treatment.

21. Surgical pathology of the thoracic wall.

To define the concept of pectus excavatum and pectus carinatum, pointing their etiological hypothesis.

To delimit their surgical indications and schematize the different technical options and the bases of their correction.

To point the anatomic-clinical characteristics, diagnostic and treatment of the syndrome of the upper thoracic outlet.

To classify the tumours of the thoracic wall according their origin and histological type, taking into account the ones of higher clinical importance.

To describe the clinical manifestations and diagnostic systematic in the tumours of the thoracic wall.

To decide the treatment of the thoracic wall tumours depending on their origin, histological type and evolution degree.

To summarize other less frequent alterations in the thoracic wall.



22. Benign tumours and pulmonary metastasis.

- To describe the anatomical-pathological classification of the lung benign tumours.
- To know the main clinical characteristics of the most frequent benign tumours, the carcinoid tumour.
- To understand the role of the surgery in the general treatment of the metastatic cancer.
- To know the types of surgery used, according their range, extension, dissection and radicality.
- To define the concept of solitary pulmonary nodule and its difference with the unique metastasis.
- To identify a solitary pulmonary nodule in a thorax simple radiography and to enumerate the characteristics of possible benignity and malignancy.
- To describe the theoretical foundations in which the surgery of pulmonary metastases are based.
- To point the limits, contraindications and factors of a good and bad prognosis.
- To know the technical bases of the pulmonary metastases surgery.

23. Thoracic traumatism .

- To justify the importance of the thoracic traumatism in the group of traumatism.
- To determine the priority sequence of the patient affected by the poly-traumatism and that represents a significant thoracic traumatism.
- To describe the physiopathological factors that influence in the seriousness.
- To distinguish through clinical manifestations and thorax simple radiography those thoracic traumatism that are serious and that need an immediate action.
- To recognise clinically and radiologically the rib fractures reasoning their clinical implications.
- To define the concept of paradoxical respiration (volet costal), delimiting its anatomical and physiopathological bases.
- To recognize clinically and radiologically the concepts of pulmonary contusion and syndrome of pleural occupation of traumatic origin.
- To describe the clinical and radiological symptoms of a diaphragmatic rupture and an airway rupture.
- To enumerate those symptoms of traumatic origin which need a pleural drainage.
- To specify the diagnostic and therapeutic importance of the pleural drainage in the thoracic traumatism.
- To schematize the different therapeutic alternatives in the thoracic traumatism, highlighting the medical ones.
- To delimit in a reasoned way the treatment patterns and the techniques to be used in the initial reanimation of a patient with a serious thoracic traumatism.
- To know the indications of the surgical treatment in the thoracic traumatism.

24. Seminar practices

Pneumological Area

- Bases for the functional diagnosis of the respiratory pathology: interpretation of tests of respiratory function.
- Bases for the study of the alterations of the gas exchange: interpretation of the blood gas and acid-base balance.
- Radiological diagnosis of the respiratory pathology I: radiological diagnosis bases of the respiratory pathology.



Radiological diagnosis of the respiratory pathology II: presentation of cases of thorax radiology.

Clinical cases of respiratory pathology of teaching interest presented by the students.

Anatomical-clinical session: presentation by the students of several anatomical-clinical cases.

Mechanical ventilation/oxygen therapy workshop: management of the oxygen therapy systems and noninvasive ventilation.

Physiotherapy workshop and other pneumological techniques. Management of the respiratory rehabilitation, aerosol therapy, blood gas and thoracic drainage systems

Surgical Area

Radiological diagnosis in thorax surgery.

Post-operative care in thorax surgery.

Drainage workshop and techniques in thorax surgery.

25. Practices. Skills classroom.

Pneumological Area

Respiratory auscultation: systematized learning of the respiratory auscultation with auscultation mannequin and computer support.

26. Clinical practices.

Clinical practices pneumological and thoracic surgery wards.

Clinical practices in the laboratory of respiratory functional exploration, unity of bronchoscopes and operating rooms of thorax surgery.

WORKLOAD

| ACTIVITY | Hours | % To be attended |
|--------------------------------|---------------|------------------|
| Theory classes | 26,00 | 100 |
| Seminars | 24,00 | 100 |
| Clinical practice | 23,01 | 100 |
| Laboratory practices | 2,00 | 100 |
| Development of individual work | 15,00 | 0 |
| Study and independent work | 45,00 | 0 |
| Resolution of case studies | 15,00 | 0 |
| TOTAL | 150,01 | |



TEACHING METHODOLOGY

A problem solving methodology will be used to a large extent, with the active participation of the students and trying to interest them in this pathology.

The practical credits will consist on seminars, clinical cases and clinical skills classroom. In the seminars, practical aspects of the respiratory pathology will be presented in a participative way, such as the management of aerosols, how to use the oxygen therapy, how to apply the non-invasive ventilation, etc, always using real instruments. Students need to learn how to use them.

Virtual tutorials will be boosted through the email and Aula Virtual. Other computer resources will be also used, such as the opening of a pneumological forum in the skills classroom.

The clinical practices will be carried out fundamentally in the wards of the University Hospitals, supervised at all times by the assistance professors and teaching collaborators. They will consist mainly of students making clinical histories to hospitalized patients (anamnesis, physical examination , complementary data, diagnosis and treatment, logically without clinical purposes, only learning) that will be reviewed later. It is desirable for the student to perform at least 8 medical records per rotational period. The Unit will provide the student, the first day of practice, the objectives and the last day will evaluate if they have been achieved.

EVALUATION

The evaluation of knowledge on, and skills in, this subject will be based on the following: A final written, multiple-choice exam, consisting of 100 questions (75 on medicine and 25 on surgery), with 4 possible answers, only one of which being valid. Correct answers will have a value of 1 point, incorrect answers will subtract 0.333 and unanswered questions will be awarded 0 points. Theory evaluation: 50% of the final grade. It will cover the contents of the theory syllabus and will evaluate the acquisition of knowledge. Practical evaluation: 50% of the final grade. It will evaluate the acquisition of skills related to general and specific practical duties. The multiple-choice test has a theoretical-practical content so it is a joint evaluation and therefore will evaluate the practical and theoretical contents of medicine and surgery, with a common final grade. The content of the exam will be the same for all groups of the same subject. The pass mark will be 50 points.

A continuous evaluation will be carried out, on a voluntary basis, throughout the course consisting of several partial evaluations on the subject matter explained; it will take place at the end of some "theoretical" classes at the Faculty and/or by means of the resource "Aula virtual" questionnaire in a non-face-to-face way. It will consist of a theory-practical multiple-choice test. The continuous evaluation, for students who decide to participate in it, will have a value of 40% of the final score. This mark will only serve to increase the grade and never to subtract from it, i.e. you can obtain the maximum grade alone with the final exam. The continuous evaluation can raise the grade from 4.5 in the final exam.

Attendance to practical sessions is mandatory. Unjustified non-attendance to more than 20% of the sessions will make it impossible to pass the course.



In order to access to an advance on the call of this subject, it is a requirement that the student has coursed all his/her practices.

REFERENCES

Basic

- Longo D, Fauci A, Kasper D, Hauser S, Jameson J, Loscalzo J . Harrison's Principles of Internal Medicine. McGraw-Hill. 20th Edition. 2018.
- Mason RJ, Broaddus VC, Martin T, King TE Jr., Schraufnagel DE, Murray J, Nadel JA. Murray and Nadel's Textbook of Respiratory Medicine. W.B. Saunders Company. 5th edition, 2010.
- Goodman LR and Felson B. Felson's Principles of Chest Roentgenology, 3rd ed Saunders and Imprint of Elsevier Inc, 2007
- West JB. J.B. West's Respiratory Physiology: The Essentials. 8th edition. Lippincott Williams & Wilkins, 2007
- Pearson's Thoracic and Esophageal Surgery, 2-Volume. by G. Alexander Patterson, F. Griffith Pearson , Joel D. Cooper, etc.
- Operative Thoracic Surgery by Larry R. Kaiser, Glyn G. Jamieson
- Thoracic Surgery Atlas by Mark K. Ferguson
- Thomas W. Shields, Publisher: Lippincott, Williams & Wilkins; 5th edition

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

Siguiendo las recomendaciones del Ministerio, la Consellería y el Rectorado de nuestra Universidad, para el período de la "nueva normalidad", la organización de la docencia para el segundo cuatrimestre del curso 2021-22, seguirá un modelo híbrido, donde tanto la docencia teórica como práctica se ajustará a los horarios aprobados por la CAT pero siguiendo un modelo de Presencialidad / No presencialidad en la medida en que las circunstancias sanitarias y la normativa lo permitan y teniendo en cuenta el aforo de las aulas y laboratorios docentes. Se procurará la máxima presencialidad posible y la modalidad no presencial se podrá realizar mediante videoconferencia cuando el número de estudiantes supere el coeficiente de ocupación requerido por las medidas sanitarias. De manera rotatoria y equilibrada los estudiantes que no puedan entrar en las aulas por las limitaciones de aforo asistirán a las clases de manera no presencial mediante la transmisión de las mismas de manera síncrona/asíncrona via "on line".