

Academic Year/course: 2021/22

## 26774 - Respiratory Apparatus and Nervous System

### Syllabus Information

**Academic Year:** 2021/22

**Subject:** 26774 - Respiratory Apparatus and Nervous System

**Faculty / School:** 104 - Facultad de Medicina

**Degree:** 304 - Degree in Medicine

**ECTS:** 9.0

**Year:** 4

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

## 1. General information

### 1.1. Aims of the course

Based on the previously obtained knowledge, the foreseen result is that the student achieves a series of general common objectives and a series of specific objectives for each of the Subject's blocks:

#### 1. General common Objectives:

- Develop the ability to professionally communicate with the patient.
- Comprehend the coexistence and interdependence between different domains of the human clinical pathology.
- Evaluate the human and clinical peculiarities of each patient and learn to respect the ethical requirements which modulate the doctor-patient professional relationship.
- Favour team work as a preparation for the future professional practice, with the necessary inter-professional relations that facilitate the excellency of the sanitary assistance.
- Promote the interest for the permanent actualization of the medical knowledge.
- Perfection the capacity of clinical reasoning.

#### 2. Specific Objectives:

NERVOUS SYSTEM BLOCK:

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RESPIRATORY SYSTEM BLOCK:

This part of the Subject is presented as a necessary learning for the students to know the most significant aspects of the respiratory pathology and to acquire and develop the clinical abilities that will allow them to adequately focus the medical assistance of the pneumologic patient.

The specific objective can be concretized on:

1. The acquirement of knowledge referring to the causes, pathogeny, clinical physiopathology, diagnostic and therapeutic procedures of the Respiratory System illnesses, as well as their importance in term of the alteration of health.
2. Learn to analyse and interpret the semiologic information obtained from the patient.
3. Present the adequate diagnostic methodology for the diverse respiratory illnesses, through the reasoned choice of the complementary tests that provide relevant information to each of them.
4. Provide the student with updated information on the therapeutic possibilities, both surgical and medical, of the diverse respiratory system's illnesses, as a base to their learning about the right treatment that should be carried on in each case.
5. Promote and develop the clinical reasoning that allows to integrate the data obtained from the patient and extracted from the complementary tests, so as to formulate pertinent diagnosis and set the possible and adequate therapeutic

measures in each case.

## 1.2. Context and importance of this course in the degree

The subject *Respiratory and Nervous System* takes place after the student has overcome the following subjects: *Semiology and Pathophysiological Fundamentals* (4<sup>th</sup> Semester), *Pharmacological and Dietetic diagnostic and therapeutic Procedures* (5<sup>th</sup> Semester), *Anatomopathological* (5<sup>th</sup> Semester), *Surgical* (6<sup>th</sup> Semester). The student must have acquired the necessary knowledge and abilities to the learning of Medical and Surgical Pathologies of the Respiratory and Nervous Systems.

NERVOUS SYSTEM BLOCK:

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RESPIRATORY SYSTEM BLOCK:

The Respiratory System pathology includes diseases of high prevalence (COPD, Broncho-pulmonary cancer, respiratory infections, bronchial asthma, sleep apnoea-hypopnea, tobacco use, traumatism, among others) that every doctor professional should know, both for a professional primary health care practice, an eventual dedication to a medical or surgical specialty or to clinic investigation. The knowledge of these diseases is equally indispensable to an adequate learning of the aspects related to the respiratory diseases through out the mentored internships of the Degree. (Semesters 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup>).

## 1.3. Recommendations to take this course

It is required to have already attended and passed the following subjects:

- Semiology and Fundamentals of Physiopathology.
- Surgical diagnostic and therapeutic procedures.

## 2. Learning goals

### 2.1. Competences

#### BASIC COMPETENCIES:

CB1 ? That the students have proved to possess and comprehend knowledge in an area of study that starts from the bases of Secondary General Education, and it is usually at a level that, even if it is supported by advanced text books, also includes some aspects that imply knowledge arising from the forefront of their field of study.

CB2 ? That the students know how to implement their knowledge to their job or vocation in a professional way and possess the competencies which are usually demonstrated through the elaboration and defence of arguments and the resolution of problems within their field of study.

CB3 ? That the students have the capacity to unify and interpret relevant data (normally within their field of study) to make judgements that include considerations on relevant topics of social, scientific or ethical nature.

CB4 ? That the students can forward information, ideas, problems and solutions both to a specialized and a non-specialized public.

CB5 ? That the students have developed those learning abilities necessary to start later studies with a high degree of autonomy.

#### SPECIFIC COMPETENCIES:

CE47 ? Recognize, diagnose and orientate the handling of the main respiratory system's pathologies.

CE49 ? Recognize, diagnose and orientate the handling of the main central and peripheral nervous system's pathologies.

CE51 ? Recognize, diagnose and orientate the handling of the main infectious pathologies in the different organs and systems.

CE92 ? Know how to carry on and interpret an electrocardiogram and an electroencephalogram.

### 2.2. Learning goals

To pass the Subject, the student must prove to be fluent on the following matters:

NERVOUS SYSTEM

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RESPIRATORY SYSTEM:

To pass the Respiratory System section corresponding to the subject *Respiratory and Nervous System*, the student should have the following knowledge and abilities:

1. Identify the characteristic and most significant aspects of the pneumological pathologies:
  - Great pneumological syndromes.
  - Respiratory infections.
  - Obstructive, Interstitial, Tumoral-Bronchopulmonary, Pleural and Vascular Respiratory Pathologies.
  - Traumatic, mediastinal and diaphragmatic Thoracic Pathologies.
  - Basic principles of the Thoracic Surgery.
2. Apply and perfection the previously acquired knowledgeto identify and recognize on a patient the existence of a pneumological process, from out the symptoms and the inspection, auscultation and percussion data.
3. Know the denomination and main application of the most common and specific complementary tests used on the diagnosis o the respiratory illnesses:
  - Blood Gases (Gasometry)
  - Image techniques.
  - Spirometry.
  - Bronchoscopy.
  - Thoracentesis.
  - External Oximetry.
  - Sleep Records.
  - Cytology.
  - Microbiological and Serological Techniques.
4. Formulate sustained diagnosis of the most common respiratory illnesses by integrating clinical data and other data extracted from the complementary tests suitable for each case.
5. Suggest the usual measures for the treatment of the most common illnesses on their different stages in the field of primary health care. (Infections, COPD, Asthma and Lung Thromboembolism among others.)
6. Identify the basic action guidelines for the treatment of other, less prevalent as the previously mentioned, respiratory illnesses or that shall be treated for preferably on special care.

### 2.3. Importance of learning goals

NERVOUS SYSTEM BLOCK:

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RESPIRATORY SYSTEM BLOCK:

1. It is the only subject of the degree that systematises the learning of the respiratory system?s medical and surgical pathologies, which gives sense to the previously acquired knowledge about the morphology and function of the respiratory system and the semiologic, pathophysiological and therapeutic diagnosis of the respiratory diseases.
2. It allows to understand the conditionings and respiratory repercussions of the pathological, and other origin, processes.
3. Then provide a scientific and educational base for later studies, scientific readings, investigation and eventual specialization related to pneumologic pathology.
4. It is necessary to the later professional medical practice in the different levels of assistance medicine related to respiratory pathology.

## 3. Assessment (1st and 2nd call)

### 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The student must prove to have achieved the foreseen learning results through out the following evaluation activities:

**GENERALITIES:**

- The final grade will be expressed in a scale from 0 to 10 points with one decimal figure and its corresponding qualitative expression (art. 5 del R.D. 1125/2003) so as:

- 0 ? 4,9 : FAILED
- 5 ? 6,9 : PASSED
- 7 ? 8,9 : REMARKABLE

- 9 ? 10 : OUTSTANDING

- Both blocks of the subject, Respiratory System and Nervous System, will be evaluated separately. It is necessary to pass both blocks to pass the subject; which means that, in case of failing one of the blocks, it can not be compensated with the other block's mark.
- To overcome the evaluation of each block, both the theoretical part and the workshops/seminars should be separately passed, which means that there is no compensation among the two parts of each block.
- The score obtained in each of the blocks will be maintained in as many as possible of the following calls.

#### **EVALUATION OF THE THEORETICAL PART OF EACH BLOCK (80% of the final grade):**

- Content: The whole program/teaching objectives of the theoretical part and the workshops/seminars.
- Format: 50 test-type questions. Five options in each question and just one right answer. Incorrect and non-replied answers will not be rated negatively.
- Score scale:
  - In order to pass 70% of the questions must be correctly answered, which means at least 35 answers of the 50 questions must be correct.
  - The number of right answers will be translated to a score scale from 0 to 10 points in which:
    - 35 right answers equal 5 points and from there on 0,333 points will be added for each right answer which would mean:
      - 35 right answers = 5 points
      - 50 right answers = 10 points
    - Since the theoretical part equals 80% of the grade of each block, the number of achieved points will be, then, multiplied by 0,8. Subsequently the score of the theoretical part of each block will vary between 0 and 8 points.
- Date for evaluation will be officially established for the final examinations. If the examination of any other subject shall overlap the fixed date, the student may take an oral exam on a different date and time, within the official examination schedules, so as to avoid the overlapping. May this be the case; the student should notify the Departments Secretary.

#### **EVALUATION OF THE WORKSHOPS/SEMINARS/CLINICAL PRACTICES AND SMALL GROUP WORK (20% of the final grade):**

- The final score for this part will vary between 0 and 2 points and will be based on:
  - Compulsory attendance to the scheduled workshops/seminars.
  - Result of work developed within small groups. Maximum score 2 points.
- In order to pass, 50% of the maximum score must be achieved, which means at least 1 points.
- The score will be maintained in as many as possible of the following calls.
- If justified, a maximum of 2 seminars/workshops/CLINICAL PRACTICES might be missed, in which case, the student will have to pass an oral exam about the content of those activities, which will take place either in the January or September call for examinations.

#### **FINAL GRADE OF EACH BLOCK:**

It will be the addition of both final scores obtained in the evaluation of the theoretical part and the workshop/seminar/clinical practices including the small group work.

#### **FINAL GRADE OF THE SUBJECT:**

- The final score of the subject will be the result of the weighted average of the final grade of each of the blocks, attending the corresponding ECTS load of each block and only if the student has passed both blocks separately.
- May the student have only passed one of the two blocks in the January exam sitting, the score will be maintained in as many as possible of the following calls.
- Honour distinctions will be given to students that achieve the highest scores, as long as it is at least 9/10 of the final score of the subject. A specific exam might be set to this purpose, if the faculty members see it fit.

#### **DATES OF GLOBAL ASSESSEMENTS:**

<https://medicina.unizar.es/cuarto-curso#horario7>

## 4. Methodology, learning tasks, syllabus and resources

### 4.1. Methodological overview

The learning process that has been designed for this subject is based on the following:

· The subject *?Respiratory and Nervous Systems?* is structured in the following terms:

- 45 Theoretical Master Lectures with a duration of 1 hour.
- 18 hours of Seminars (or alternatively clinical practices)
- 18 hours of workshops (or alternatively clinical practices)
- 6 hours of mentoring

· The content of the theoretical Master Lectures will be supported by a textbook or a manual previously recommended and adapted to the students level of knowledge.

· During the Workshops and Seminars, the students will work on clinical cases and will have to solve posed problems through personal and teamwork.

· The student will implement the acquired knowledge in this subject and in the rest of the subjects of the Degree, through the *?Mentored Internship?* which will compulsory take place during the first semester of the 6<sup>th</sup> year (*subject 26730 ? 30 ECTS ? 750 hours*) and during the second semester of the 6<sup>th</sup> year (*subject 26731 ? 24 ECTS ? 600 hours*). Optionally these internships will also take place during the second semester of the 5<sup>th</sup> year (*subject 26728 ? 18 ECTS ? 450 hours, and subject 26729 ? 12 ECTS ? 300 hours*), which adds up to 2100 hours of clinical practices developed in a rotatory system through different assisting services throughout 18 months.

**NERVOUS SYSTEM BLOCK:**

The learning process that has been designed for the Nervous System to have 100 hours to its teaching (50 to Neurology and 50 to Neurosurgery), which are divided into:

A. Face-to-face teaching (45%): 45 hours  
? Classes in large groups: Corresponds to lectures on the theory of the subject are expositions with the help of the computer, projector, etc. Its content will be supported by a text or manual recommended previously and adapted to the student's level of knowledge.

? Seminars-Workshops: Teaching based on clinical cases with student participation and answers to the teacher's questions, through personal and teamwork and practice classes.  
? Tutorials: Consist of personal interviews with a professor for academic guidance, review of one or several topics and help in reviewing the proposed seminars, etc.

? Evaluation: It includes the different tests described in other sections for the verification of theoretical and practical knowledge and other acquired competences.

B. Non-contact teaching (55%): 55 hours  
? Consists of the personal study of the student based on the different sources of information and individual work.

**RESPIRATORY SYSTEM BLOCK:**

The learning process that has been designed for this block is based on the following:

- The subject is structured in 10 blocks of lectures which must be given in 25 hours (15h corresponding to Medicine and 10 hours corresponding to Surgery). The blocks are named with letters from A to J.
- Block A, B, C, D, and H will be given by Medicine (M), while block E, I and J will be given by Surgery (C). Block F includes two lectures, one M and one C. Block G includes five lessons, four M and one C.
- The content of the theoretical lessons will be supported by a previously recommended bibliography and adapted to the student's level of knowledge.
- During the Seminars and Workshops, the students will work on clinical cases of fundamental respiratory pathology. For this purpose, it is essential and compulsory for the students to do previous research.
- During the mentorships, personal interviews or internet communication will be held with a professor to solve the possible doubts arisen by the students and for academic orientation.

### 4.2. Learning tasks

The course includes the following learning tasks:

**NERVOUS SYSTEM BLOCK:**

The learning process that has been designed for the subject Nervous System has allocated 100 hours to its teaching (50 to Neurology and 50 to Neurosurgery), which are divided into:

A. Face-to-face teaching (45%): 45 hours

All face-to-face teaching activities will be carried out according to the transverse organizational chart of the Center, with the following considerations:

- 1. Master Classes or in large groups. They are a total of 22 of one hour in duration: 12 correspond to Neurology and 10 to Neurosurgery and will be distributed within the time allotted to this part of the subject in the seventh semester of the degree.
- 2. Seminars. They comprise a total of 8 hours, of which 4 are Neurology and 4 Neurosurgery and will be distributed throughout the time allocated to this part of the subject in the seventh semester of the degree.

- 3. Workshops and practices: They comprise a total of 16 hours (12 of medicine and 4 of surgery) and will be distributed throughout of the time allotted to this part of the subject in the seventh semester of the degree.
- 4. Tutorías: They cover a total of 3 hours (1.5 Neurology and 1.5 Neurosurgery) developing in the seventh semester of the degree.
- 5. Evaluation: It will take place in January and September (see dates in the section "evaluation"). In case of exceeding only the theoretical part or the part of seminars-workshops-practices and "work in small groups" will maintain its qualification for September. If you have passed the part of seminars-workshops and "work in small groups" (not applicable to the theoretical part), your note may be applied for the following year (this is valid only for one year).

B. Non-contact teaching (55%): 55 hours

? Consists in the personal study of the student based on the different sources of information and individual work.

RESPIRATORY SYSTEM BLOCK:

Attendance-based courses (45% ): M ? 1,35 ECTS ? 33,75 h

C ? 0,9 ECTS ? 22,50 h

Large groups (45%): M ? 0,61 ECTS ? 15,2 h

C ? 0,41 ECTS ? 10,13 h

### 4.3. Syllabus

The course will address the following topics:

#### Nervous System Program

- 1. Pathophysiology of the Central Nervous System
- 2. Cerebrovascular Diseases: concept, classification, pathogenesis, and clinical manifestations. Diagnosis, treatment and prevention of stroke.
- 3. Diseases of the autonomic nervous system
- 4. Hypokinetic Syndromes: Parkinson's disease. Hyperkinetic Syndromes
- 5. Alzheimer's disease and other dementias.
- 6. Demyelinating diseases.
- 7. Epilepsia
- 8. Spinocerebellar syndromes and motor neuron diseases
- 9. Diseases of peripheral nerves.
- 10. Headache.
- 11. Cranioencephalic and raquimedular malformations.
- 12.- Hydrocephalus
- 13.- Cranial Trauma I
- 14.- Cranial Trauma II
- 15.- Brain tumors I
- 16.- Brain tumors II
- 17.- Aneurysms. Arteriovenous malformations. Surgical management of spontaneous intracerebral Hemorrhage.
- 18.- Spinal injury
- 19.- Spinal cord tumors and infectious diseases
- 20.- Degenerative spine disease: cervical and lumbar
- 21.- Muscle and neuromuscular junction diseases
- 22.- Pathology of sleep

Units 11 to 20 correspond to the neurochirurgical pathologies.

**Workshop Seminars of Neurosurgery: 4 seminars 2 h. Total 8 h.**

- Management of Traumatic Brain and Spine Injury.
- Diagnosis and Management of Central Nervous System tumors.
- Emergencies in Neurosurgery.
- Management of Degenerative Spine Disease Patients

## Neurology Program

### Workshop Seminars of Neurology: 2 seminars 2 h. Total 8 h.

- Physical exam in Neurology
- Neurophysiology

### Clinical practice: 12h

## T u t o r i a l s

Tutorials are personal or attending classes, requesting day and time with the chosen, or telematics, developed exclusively for the teacher/care business hours (8 to 15h) teacher, group and tutorials we will also have to be carried out by teachers in charge of Seminars and Workshops

## RESPIRATORY PROGRAMM

### Classroom teaching

#### 1. LARGE GROUPS

The program is divided into 30 theoretical lessons that must take place in 25 h., distributed in a logical and sequential manner with their medico-surgical contents semi-embedded and grouped into 10 blocks. Each block is listed next with the corresponded name and number of hours:

- Block A. It corresponds to the "pulmonary syndromes" and includes four lessons that referred to the most significant ones of the subject.
- Blocks B, C, D, and H are concerned respectively with four of the most common respiratory pathologies: "infectious" (four lessons), "obstructive (three lessons), "interstitial"(five lessons) and"vascular"(two lessons)."
- Block E allows the student to know the general characteristics of thoracic surgery and the basic concepts of the lung transplant (one lesson).
- Block F (two lessons) addresses in a semi-embedded manner the "pulmonary tumors".
- Block G (four M lessons and one C lesson) deals with "pleural pathology".
- Block I (two lessons) is about of the ?traumatological thoracic pathology? and
- Block J (two lessons), deals with the ?pathology of the mediastinum and diaphragm?
- The subjects taught through lectures include the following:

#### **A.PULMONARY SYNDROMES. (2 hours)**

- 1. Respiratory failure. Diagnosis and treatment (M).
- 2. Adult respiratory distress syndrome (M).
- 3. Sleep apnea/hypopnea syndrome (M).
- 4. Obesity-hypoventilation syndrome (M).

#### **B. RESPIRATORY INCTIOUS PATHOLOGY. (4 hours)**

- 5. Acute bronchitis (M).
- 6. Pneumonia. Lung abscess (M).
- 7. Pulmonary tuberculosis. Other mycobacteriopathies (M).
- 8. Pulmonary Mycosis (M).

#### **C. OBSTRUCTIVE PULMONARY DISEASES (4 hours)**

- 9. Chronic obstructive pulmonary disease (M)
- 10. Asthma (M)
- 11. Bronchiectasis. Adults cystic pulmonary fibrosis (M)

#### **D. INTERSTITIAL PULMONARY DISEASES (2 hours)**

- 12. Diagnostic strategies among diffuse pulmonary diseases (M).
- 13. Occupational and environmental disorders (M).
- 14. Extrinsic allergic alveolitis (M):
- 15. Idiopathic interstitial lung diseases. Idiopathic pulmonary fibrosis (M).
- 16. Respiratory involvement in systemic diseases. Sarcoidosis (M).

#### **E. THORACIC SURGERY (1 hour)**

- 17. General principles of thoracic surgery. Lung transplant (C).

#### **F. NEOPLASM OF THE LUNGS (3 hours).**

- 18. Lung cancer. Benign tumors of the lungs (M).
- 19. Lung cancer surgical treatment approach (C, 1 hour)

### **G. PLEURAL DISORDERS (3 hours) + 1 h.**

- 20. Diagnostic approach in pleural disorders (M).
- 21. Infectious pleural effusions (M).
- 22. Malignant pleural effusions (M).
- 23. Other non-infectious non-malignant pleural effusions (M)
- 24. Pneumothorax. Surgical treatment of empyema (C).

### **H. PULMONARY VASCULAR DISORDERS (2 hours)**

- 25. Pulmonary hypertension (M)
- 26. Pulmonary thromboembolic disease: pulmonary emboli (M).

### **I. THORACIC TRAUMATISM (2 hours)**

- 27. Close thoracic trauma (C).
- 28. Open thoracic trauma (C).

### **J. DISORDERS OF THE MEDIASTINUM AND DIAPHRAGM (2 hours)**

- 29. Mediastinitis and neoplasm of the mediastinum (C).
- 30. Diaphragmatic hernias and eventrations

## **2. SMALL GROUPS.**

### **Seminars**

- Seminars are related to topics of the general medical and surgical program and are based on clinical cases and they will be displayed through computer presentations with the active participation of the student

- Each seminar will be held in groups of approximately 20 students. Your schedule and distribution will be shown in advance on bulletin boards at the departments of medicine and/or surgery.

- The topics are as follows:

- 1. The person in contact with a tuberculous patient (M)
- 2. Patient with pneumonia (M)
- 3. Patient with COPD and patient with asthma (M)
- 4. Patient with lung cancer (M and C) (2 seminars).
- 5. Suspected pulmonary thromboembolism (M)
- 6. Patient with suspected sleep apnea (M).
- 7. Thoracic drainage. Pulmonary resections (C).
- 8. Traumatized chest (C).

### **Workshops.**

- Workshops are eminently practical and where possible, developed partially with simulators as part of a "skills Lab". Each workshop will take place in groups of approximately 20 students, those who receive the seminars. Your schedule, order of presentation and distribution will appear in advance on bulletin boards of the departments of medicine and/or surgery. The issues to consider are as follows:

- 1. Spirometry. Other tests (M).
- 2. Arterial blood gas (M)
- 3. Oxygen therapy. Non-invasive mechanical ventilation (M)
- 4. Smoking (M)
- 5. Preoperative and postoperative management in thoracic surgery (C).
- 6. Specific complications in thoracic surgery (C).

### **Tutorials.**

Tutorials will be personal and face-to-face. The student will ask previously for date and time with the chosen teacher. Tutorials can also be telematics. All tutorials are done exclusively during teaching/care hours (8 to 15 h). We will also have tutoring groups to be carried out by the teacher in charge of the corresponding seminars and workshops.

## **4.4. Course planning and calendar**

Calendar of attendance-based sessions and work presentations.

NERVOUS SYSTEM BLOCK:

Planning of learning activities and calendar of key dates. Calendar of face-to-face sessions and presentation of works

**B L O C K                      O F                      T H E                      N E R V O U S                      S Y S T E M**  
The outline of the planning of the development of this part of the subject includes:



? Twenty-four master classes distributed according to the general organization chart of the subject  
? Seminars: 6 according to the programming of the subject  
? Workshops

#### RESPIRATORY SYSTEM BLOCK:

The planning for the development of this part of the subject includes:

- Master Lessons: 25 hours, distributed according to schedules and classrooms enabled by the Academic Centre.
- Seminars: 9, according to the subject's program.
- Workshops: 6, according to the subject's program.
- Small group works (4-5 students) distributed in Seminars will be developed and handed in within the time-frame indicated by the responsible Professor. Each group will only develop one group-work among all the offered options in the Seminars.

The attendance-based courses will be held on the 4Th Year of the Degree, during the First Semester, Monday to Friday, between 8:00 am and 15:00 pm. They will be compiled on:

- Larger Groups
- Seminars
- Workshops
- Mentoring

Timetables may be consulted on <http://medicina.unizar.es/cuarto-curso#horario7>

Examination sitting dates of the Academic Year will be held in January and September.

#### NERVOUS SYSTEM BLOCK:

#### RESPIRATORY SYSTEM BLOCK:

1. Final Examination within the period fixed by the Academic Centre.
2. Seminars will be held within the scheduled period for the Respiratory System Block, on the 7Th Semester of the Medical Degree.
3. The Workshops will be held in parallel with the Seminars.
4. Both larger group lessons and smaller group lessons will be held following the transversal Academic Centre's Organigram.
5. Evaluations will take place in January and September (dates can be checked on the 'Evaluation' section).

*Shall just one of the two parts, theory or practice (workshop/seminars/smaller groups' work) be passed, the results will be kept until the end of the following year.*

Global Assessment: <http://medicina.unizar.es/cuarto-curso#horario7>

#### 4.5. Bibliography and recommended resources

All internal medicine textbooks can be used, particularly. "Harrison's" and "Farreras"

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=26774>