COURSE DATA

DATA SUBJECT

Code: 34712
Name: Pharmacology, anaesthesia and resuscitation
Cycle: Undergraduate Studies
ECTS Credits: 9
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1206 - Degree in Dentistry	Facultat de Medicina i Odontologia	2	Annual

SUBJECT-MATTER

Degree	Subject-matter	Character
1206 - Degree in Dentistry	Pharmacology, anaesthesia and reanimation	COMPULSORY

COORDINATION

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SUMMARY

Students enrolled in **Basic Pharmacology** are expected to learn and understand the general principles of pharmacology; the pharmacokinetic phases that make it possible for a chemical molecule (drug) to reach a bio phase in an adequate concentration so that, once there, it can interact with another molecule (receptor) through pharmacodynamic mechanisms to obtain the desired pharmacologic effect, and often other non-desired ones as ADR.

Besides, Basic Pharmacology includes the Study of the pharmacologic groups that had been classified onto the following categories according to their repercussion or usagewithin the odontologic practice:

1. Drugs used or prescribed by the dentist.

2. Drugs prescribed to the patient by the physician for his or her specific pathology, but that also influence directly on the dental treatment.

3. Drugs commonly prescribed to the patient by the physician for its specific pathology and that can cause mouth reactions or interact in an adverse way with the drugs prescribed by the dentist.

4. Abuse drugs

Pharmacologic groups included in the categories number 1 and 2 must be studied in detail. Their study should include the observation of their action mechanism, pharmacokinetics and pharmacologic effects. As a counterpart for this, the emphasis put into the study of categories 3 and 4 must correspond to those actions and attributes that directly influence the dentist¿s practice.

Students enrolled in **Clinical Pharmacology** are expected to be capable of making a rational use of the drugs commonly prescribed by the dentist.

Anesthesia and resuscitationpretends that students become aware of a matter that will accompany them throughout their careers. As reference to: - The pre-anesthetic assessment. - Local and general anesthesia with its indications and complications. - How to treat postoperative pain.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

It is recommended that, in order to acquire the competencies of Basic Pharmacology, students have passed the basic subjects within the Health Sciences field, especially Biochemistry, Biology, and Human Physiology.
It is also recommended that, to acquire the general and specific competencies of Clinical Pharmacology, students have passed Basic Pharmacology and should be familiar with and understand the most relevant scientific aspects of the subjects included in Block III (Pathology).

COMPETENCES / LEARNING OUTCOMES

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Comprender las ciencias biomédicas básicas en las que se fundamenta la Odontología para asegurar una correcta asistencia buco-dentaria.

Comprender los fundamentos de acción, indicaciones y eficacia de los fármacos y otras intervenciones terapéuticas, conociendo sus contraindicaciones, interacciones, efectos sistémicos e interacciones sobre otros órganos, basándose en la evidencia científica disponible.

Conocer, valorar críticamente y saber utilizar las fuentes de información clínica y biomédica para obtener, organizar, interpretar y comunicar la información científica y sanitaria.

Conocer del método científico y tener capacidad crítica para valorar los conocimientos establecidos y la información novedosa. Ser capaz de formular hipótesis, recolectar y valorar de forma crítica la información para la resolución de problemas, siguiendo el método científico.

Conocer el método científico y tener capacidad crítica para valorar los conocimientos establecidos y la información novedosa.

Conocer la farmacología general y clínica en la práctica odontológica.

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Conocer las bases farmacológicas de las distintas técnicas anestésicas tanto locales como generales, así como el papel de la sedación y la anestesia general en el manejo del paciente odontológico.

Conocer las ciencias biomédicas en las que se fundamenta la Odontología para asegurar una correcta asistencia buco-dentaria. Entre estas ciencias deben incluirse contenidos apropiados de:
Embriología, anatomía, histología y fisiología del cuerpo humano.
Genética, Bioquímica, Biología celular y molecular
Microbiología e inmunología

Conocer los procesos generales de enfermar, curar y reparar, entre los que se incluyen la infección, la inflamación, la hemorragia y la coagulación, la cicatrización, los traumatismos y las alteraciones del sistema inmune, la degeneración, la neoplasia, las alteraciones metabólicas y los desordenes genéticos.

Conocer los procesos generales de enfermar, curar y reparar, entre los que se incluyen la infección, la inflamación, la hemorragia y la coagulación, la cicatrización, los traumatismos y las alteraciones del sistema inmune, la degeneración, la neoplasia, las alteraciones metabólicas y los desordenes genéticos.

Prescripción apropiada de fármacos, conociendo sus contraindicaciones, interacciones, efectos sistémicos y repercusiones sobre otros órganos.

Promover el aprendizaje de manera autónoma de nuevos conocimientos y técnicas, así como la motivación por la calidad.

DESCRIPTION OF CONTENTS

1. THEORY: PHARMACOLOGY

A. General Principles

1. Introduction: concept of pharmacology and its relationship with therapeutics.

2. Pharmacokinetics: absorption, distribution, biotransformation, and excretion processes. Drug administration schedules and monitoring through plasma levels.

3. Pharmacodynamics: drug-receptor interaction, types of pharmacological receptors, and dose-response curve.

4. Adverse reactions and drug interactions: concept and general mechanisms.

B. Drugs in Categories 1 and 2

5. Cellular mediators: neurotransmitters of the autonomic nervous system and autacoids. Adrenaline, H1 antihistamines, and drugs that modulate serotonin.

6. Pharmacological treatment of pain and inflammation. Opioid analgesics. Nonsteroidal anti-inflammatory drugs. Steroidal anti-inflammatory drugs. Local anesthetics.

7. Pharmacological treatment of infection. Antibiotics. Antifungals. Antivirals.

8. Antiseptics and disinfectants.

9. Hemostasis pharmacology. Anticoagulants and procoagulants. Hemostatics and fibrinolytics.

10. Treatment of anxiety. Benzodiazepines and related drugs.

C. Drugs in Categories 3 and 4

11. Central Nervous System Pharmacology. Anticonvulsants and antiparkinsonian agents. Neuroleptics. Antidepressants. General anesthetics and neuromuscular blockers.

12. Gastrointestinal pharmacology. Gastric acid secretion inhibitors. Gastric mucosa protectors. Antiemetics.

13. Cardiovascular pharmacology: antihypertensives, antianginal agents, antiarrhythmics, and heart failure treatment.

14. Respiratory system pharmacology.

15. Pharmacology of anemia and hematopoietic growth factors.

16. Hormonal pharmacology. Phosphorus and calcium metabolism. Anabolic agents; contraceptives. Insulin, hypoglycemic agents. Antithyroid drugs.

17. Immunomodulators and antineoplastic chemotherapy.

D. Clinical Pharmacology

18. Concept of clinical pharmacology. Factors that modify drug response. Maternal-fetal, pediatric, and geriatric

clinical pharmacology. Special situations in dental therapeutics.

19. Pharmacovigilance: general concepts and particular aspects in dentistry.

2. THEORY: ANESTHESIA

1. Scientific foundations of Anesthesiology. Resuscitation and pain therapeutics.

2. Clinical evaluation of patients undergoing any anesthetic procedure.

3. Monitoring in Anesthesia. Needs, options, and methodology.

4. Local and regional anesthesia. Classification and applications.

5. Accidents and complications in local and regional anesthesia. Diagnosis and treatment.

6. General anesthesia. Structural components. Classification and applications.

7. Accidents and complications in general anesthesia. Diagnosis and treatment.

8. Sedation in dental practice. Concept, objective, applications, monitoring, potential complications and their management.

9. Pain: concept, classification, and management options.

3. SEMINARS - CLINICAL DENTAL PHARMACOLOGY

1. Drug information sources. Drug classification and nomenclature. Legislation and bioethics.

2. The prescription. Pharmacological anamnesis, patient instructions, and therapeutic compliance.

3. Oral repercussions of major drugs of abuse. Tobacco, alcohol, cocaine, methamphetamines, marijuana, etc.

4. Drug-induced diseases of the oral cavity.

5. Selection and use of local anesthetics in dentistry.

6. Selection and use of NSAIDs and corticosteroids in dentistry.

7. Recommendations for the use of anti-infectives in dentistry. Prophylaxis. Patients with comorbidities.

8. Relevance of widely used therapeutic drugs in dentistry.

4. PRACTICAL SESSIONS - PHARMACOLOGY

1. Pharmacokinetics I: Plasma level curves. Concept of volume of distribution. Compartmental models. Drug administration routes.

2. Pharmacokinetics II: Dosage schedules. Simulation and interpretation of plasma level curves using software.

3. Pharmacodynamics: Dose-response curve, pharmacological antagonisms.

4. Problem solving in pharmacokinetics and pharmacodynamics.

5. Pharmaceutical forms. Dose calculations.

6. Clinical trial I: concept and types of clinical trials.

7. Clinical trial II: presentation and evaluation of clinical trials.

8. Problem solving and clinical case studies.

5. SEMINARS - ANESTHESIA

- The chain of survival.
- Airway management.
- Ventilatory assistance.
- Vascular access.
- Materials used in local and regional anesthesia.
- Materials used in general anesthesia.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	50,00
Laboratory	15,00
Classroom practices	25,00
Total hours	**90,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	27,00
Independent study and work	54,00
Preparation of lessons	32,00
Preparation for assessment activities	22,00
Resolution of case studies	0,00
Total hours	**135,00**

TEACHING METHODOLOGY

BÁSIC PHARMACOLOGY

The course is set out on theoretical and practical classes.Within the practical classes, seminaries and laboratory practices will be included.Seminaries will be composed by a group of 40 students and laboratory practices will be composed by 15.

The part of the course that will verse on general principles (module A) will be composed by theoretical classes (8 hs. Maximum) and practical classes (5 practices.)

The part of the course that will verse on drugs in the categories 1 and 2 (Module B) will be composed by theoretical classes (10 hs. Maximum).

The part of the course that verses on drugs in the categories 3 and 4 (module C) will consist on the elaboration of seminaries on each pharmacologic group (5-8 seminaries).

It is suggested that the teacher provides the students with reference files (index) on the pharmacologic groups seen in this module C, in order to help them prepare the seminar. The aim is that the seminar provides the basic information on pharmacology (action mechanism and derivative actions) together with the possible relevancies in odontology: ADR, interaction, etc.In addition to this, a question pool will be made and all the students will have to be familiar with it after assisting to the seminars.

The methodology and hours allocated to each part of the programme may slightly vary throughout the course according to students¿ requirements and evolution of this new methodology. However, the total amount of global, practical and theoretical hours established by the new curriculum will be fully completed.

CLINICAL PHARMACOLOGY

In**Clinical Pharmacology**students are expected to learn how to make a rational usage of the drugs usually prescribed by the dentist. For this purpose, the following activities are planned:

A) Traditional theoretical classes to develop the contents corresponding to General clinical Pharmacology.

B) Problem solving in order to learn how to select the most accurate drugs in the treatment ofsyndromes and symptoms of frequent appearance in odontology according to efficiency, safety and patient¿s peculiarities criteria.

Seminars in order to elaborate a guide on frequently used therapeutic drugs

ANESTHESIA AND REANIMATION

In this matter seven traditional lectures and eight practical classes are proposed. During the practical classes seminars for all the students will take place.

The gender perspective, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

EVALUATION

PHARMACOLOGY (2/3 of the total of the subject)

The overall grade of 100% corresponding to the pharmacology part of the subject will be obtained from the following evaluations:

- 60% theoretical evaluation: examination of knowledge taught in theoretical classes. This exam is taken on the official dates.

- 40% practical evaluation: Continuous evaluation; solving problems and practical cases, carrying out different proposed activities; and attendance and participation in practices and seminars. The concepts of the seminars are also subject to examination in the official date of exam.

ANESTHESIA (1/3 of the total of the subject)

The overall grade of 100% corresponding to the Anesthesia part of the subject will be obtained from the following evaluations:

- 60% theoretical evaluation: objective test (it will consist of 40 multiple-choice questions with 4 options and a single valid answer; each correct answer will add 1 point, and 0.33 points will be deducted for each incorrect answer) in the official examination.

- 40% practical evaluation: 20% corresponds to preparation and defense of works in seminars; 5% to attendance at in-person training activities and student attitude; and the remaining 15% to practical skills developed in the work carried out in the workshops.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure.

GLOBAL EVALUATION OF THE SUBJECT

It is necessary to pass both parts of the subject, Pharmacology and Anesthesia, separately. In which case, once both parts have been approved, the total overall grade in the minutes corresponds to the sum of 2/3 part of Pharmacology and 1/3 part of Anesthesia.

Students are reminded of the importance of carrying out evaluation surveys to all teaching staff of the degree subjects.

REFERENCES

BASIC

- Tripathi KD. Farmacológicas en odontología. Fundamentos. Panamericana Buenos Aires 2008
- Baños JE, Farré M. Principios de Farmacología Clínica. Barcelona. Masson. 2002
- Yagiela JA, Neidle SA, Dowd FJ. Pharmacology and therapeutics for dentistry. 6ª ed. Mosby. St Louis 2011
- Wilton Levine. Procedimientos en anestesia del Massachutts general hospital. 8ª ed. 2013
- Espinosa Meléndez MT. Farmacología y Terapéutica en Odontología. Panamericana. 2012.
- Velazquez. Manual de farmacología básica y Clínica. Panamericana. 2013
- Katzung. Farmacología básica y clínica. Lange, McGraw Hill. 2009

e-Health Resources:

- ClinicalKey Student Medicina, Odontologia y Enfermería https://uv-es.libguides.com/RecursosSalut
- Acces Medicina https://uv-es.libguides.com/Access_Medicina
- Médica Panamericana https://uv-es.libguides.com/Medica_Panamericana

COMPLEMENTARY

- Florez J. Armijo JA, Medaivilla A. Farmacología Humana. 5ª ed. Elsevier España, S.L. Barcelona 2008.
- Requa Clark B. Applied Pharmacology for the dental hygienist. 4ª ed. Mosby. St Louis. 2000.
- Clemente Muriel y José Luis Madrid. Estudio y tratamiento del dolor agudo y crónico. ELA. 1994.