

Psychoendocrinology

Brief description of course content (According to the programme's verification report)

Descriptors: Principles of endocrinology and immunology. Endocrinology of normal and pathological emotional and motivational processes. Temporal organisation of behaviour. Hormones and development. Hormonal modulation of learning and memory. Endocrinology and immunology in normal and pathological behaviour.

Learning outcomes

- To understand the neuroendocrine and immune systems and their interaction as a scientific basis for clinical practice.
- To understand the Neuroendocrine System as a substrate of motivational and affective processes, enabling the use of tests that detect the psychoendocrine differences underlying normal and pathological behaviour.
- To understand the involvement of the hormonal system in ontogenetic development within the field of Health Sciences.

Planned learning activities

Theory Syllabus

- **Topic 1.** Introduction to Psychoendocrinology: Glands, hormones and mechanisms of action.

- o Concept, history and study techniques.
- o The Endocrine System of vertebrates: glands and hormones.
- o Hormonal regulation.
- o Endocrine dysfunctions.

- **Topic 2-** Psychoneuroimmunology: interactions between the Nervous System, the Endocrine System, the Immune System and Behaviour.

- o The immune system and Psychoneuroimmunology.
- o Connections between biological communication systems.
- o Influences of biological systems on behaviour.
- o Influences of behaviour on biological systems.

- **Topic 3.** Hormones and ontogenetic development of behaviour: from fertilisation to old age.

- o Sexual differentiation of the nervous system and behavioural dimorphism.
- o Brain development during gestation and early development: role of thyroid hormones.

- o Infancy and growth hormone.
- o Puberty and maturity.
- o Aging.
- **Topic 4.** Sexual behaviour and parental behaviour.
 - o Sexual behaviour as sexodimorphic behaviour.
 - o Sensory control of sexual behaviour.
 - o Neural mechanisms of sexual behaviour.
 - o Activational effects of hormones on sexual behaviour.
 - o Immune system and sexual behaviour.
 - o Endocrinology of gestation, childbirth and maternal behaviour.
 - o Sensory aspects and neural mechanisms of maternal behaviour.
 - o Brain plasticity during gestation and postpartum in humans.
- **Topic 5.** Temporal organisation of behaviour: biological rhythms and their disorders.
 - o Biological rhythms and clocks: adaptive value.
 - o Internal clocks and environmental signals.
 - o Neural regulation of circadian rhythms.
 - o Hormonal regulation of circadian and seasonal rhythms: pineal gland and melatonin.
 - o Practical applications.
- **Topic 6.** Psychoendocrinology of nutrition: Obesity and Anorexia.
 - o Nutrition and energy balance.
 - o Obesity.
 - o Anorexia nervosa and bulimia.
- **Topic 7.** Hormonal modulation of learning and memory.
 - o Learning and memory in stressful situations: adrenaline and glucocorticoids.
 - o Sex hormones, learning and memory.
 - o Immune influences.
- **Topic 8.** Psychoneuroimmunology of stress and moods.
 - o Stress and associated diseases.
 - o Mood states: stress, anxiety and depression.

- o Positive emotions.

At the beginning of the course, a didactic guide will be posted on the prado2 virtual platform, containing detailed information on each topic (headings, teaching objectives, methodology, summary of the theoretical and practical contents as well as a bibliography to facilitate autonomous learning).

Practical Syllabus

INTERNSHIPS: Two types of internships are established: 1) standard internships that will be carried out at the time and place established by the faculty and will take place on a weekly basis (except when the timetable is occupied by internships in small groups "by syllabus"). 2) "per programme" practicals (mainly face-to-face), whose timetable will depend on the availability of the necessary spaces for them (microscope laboratory, computer room, etc.) and on the number of students enrolled in the subject. At the beginning of the course, a guide of practical activities will be posted on the prado2 virtual platform, describing the practices and activities that are planned to be carried out during the course. The following practices will be developed by subject:

- Topic 1: Video viewing. Gonads. Microscopic examination of endocrine tissue ("per programme" practical in the department's practical laboratory).
- Topic 2: Viewing of videos.
- Topic 3: Viewing of videos. Seminar on sexual differences and gender equality.
- Topic 4: Seminar on biological bases of sexual orientation ("by programme" practical in seminar H).
- Topic 5: Watching videos.
- Topic 6: Watching videos.
- Topic 7: Research in Psychoendocrinology.
- Topic 8: Watching videos. Endocrine pharmacology: use of medimecum-vademecum (practice "per programme").

SELF-FORMATIVE ACTIVITIES: A folder of activities will be completed with questions related to the theoretical and practical syllabus.