DEPARTMENT OF CLINICAL NEUROSCIENCE

K8F2526, Neuropsychopharmacology, 2 credits (hec)

Neuropsykofarmakologi, 2 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus was approved by The Committee for Doctoral Education on 2023-10-31, and was last revised on 2025-09-20. The revised course syllabus is valid from spring semester 2026.

Responsible department

Department of Clinical Neuroscience, Faculty of Medicine

Contributing department/s

Department of Physiology and Pharmacology

Prerequisite courses, or equivalent

No prerequisite courses, or equivalent, demanded for this course.

Purpose & Intended learning outcomes

Purpose

This neuropsychopharmacology course is aimed for doctoral students who are interested in clinical and preclinical research in affective disorders, schizophrenia, substance use disorders, and anxiety-related disorders. The course will explore the neurobiological basis of these psychiatric disorders, summarize current pharmacological and psychotherapeutic treatment strategies, and will give an overview of current state-of-the-art pre-clinical models and novel pharmacological therapies in development (e.g. rapid-acting antidepressants and psychedelics).

Intended learning outcomes

At the end of the course, the student is expected to be able to:
1) explain the neurobiological mechanisms underlying the major psychiatric disorders and be able to account for different hypotheses in this field.

2) describe the current, emerging and experimental pharmacological and non-pharmacological

treatments for these major psychiatric disorders, including their mechanisms of action and some of the limitations.

3) describe, explain and discuss the differences and translational value of the pre-clinical methods and animal models for studying the effects of drugs on different symptoms of psychiatric diseases.

4) evaluate the use of molecular and functional imaging techniques in the study of e.g. receptor occupancy, and treatment response in psychiatric disorders.

5) interpret and critically evaluate the translational potential of recent preclinical research literature and understand the current outstanding research questions.

Course content

Classical and novel neuropsychopharmacology and psychotherapeutic treatment strategies based on the neurobiological basis of

- Affective disorders: from cells & circuits to *in vivo* imaging.

- Bipolar disorder, environmental factors and *in vitro* models.

- Addiction / Schizophrenia

- Anxiety, eating disorders & CBT.

Forms of teaching and learning

The pedagogic framing of the course includes lectures given by invited clinicians and researchers within the field of psychiatric disorders.

This course will include lectures and short seminar-type sessions.

Whenever possible, each course day will have a focus on a theme or topic.

We will also have demonstrations of key models/methods which are used in specific research projects. These demonstrations will take place during among others planned visits to the pre-clinical in vivo imaging facilities.

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

The demonstrations are mandatory. The student has to compensate absence from this part with a written description of the model/method.

Forms of assessment

The learning outcomes will be assessed at the end of the course by an individual assignment that the students will prepare to present and discuss with the rest of the group, and one exam with multiple choice questions.

Regarding use of generative AI tools: Doctoral education is about developing critical thinking and academic independence. Students may use assistance from AI for help with grammar, language and flow of the assignment to present, but they should have done the literature research, prepared the slides and written the texts themselves.

Please consult and follow the KI guidelines on how you should approach using AI in our coursework in this page: https://staff.ki.se/doctoral-education/time-to-defend-your-thesis/using-generative-ai-when-writing-academic-texts-within-doctoral-education

Course literature

Recommended literature:
- Biological Psychology (Rosenzweig, Breedlove, Watson, Ed.) 4th Edition.
- The Biochemical Basis of Neuropharmacology (Cooper, Bloom, Roth, Ed.) 7th Edition.
- Essential Psychopharmacology, SM Stahl, (Cambridge University Press).
- The Biochemical Basis of Neuropharmacology, JR Cooper, FE Bloom, RH Roth (Oxford University Press).
- Psychopharmacology: the Fourth Generation of Progress, FE Bloom, DJ Kupfer (Raven Press).
- In addition, important research papers will be distributed at the time of the course occasion.