SN00035  Neurochemistry 2 - Neurochemistry of Disease, 3 credits
Neurokemi 2 - Neurokemi i sjukdom, 3 högskolepoäng

Third-cycle level / Forskarnivå

Confirmation
This syllabus was confirmed by the Council for PhD Education at Sahlgrenska Academy on 2019-09-20, and is valid from Spring semester 2020.

Responsible Department
Institute of Neuroscience and Physiology, Sahlgrenska Academy

Participating Department/s
Institute of Neuroscience and Physiology

Entry requirements
Entrance qualifications is that the student is a registered PhD student.

Learning outcomes
After completing the course the PhD student is supposed to be able to:

Knowledge and understanding
- demonstrate knowledge of different neurochemical aspects of the pathology of neurodegenerative and psychiatric diseases
- demonstrate understanding of neurodegenerative disease pathology in AD and PD with focus on amyloid, tau and synuclein pathology
- demonstrate knowledge on inflammatory processes and glial-cell mediated processes within different neurodegenerative disease pathologies
- demonstrate understanding of neurotoxin induced effects that can lead to neurodegenerative disease processes
- understand the general principles of different neurochemical methods that are used for diagnosis of brain diseases (eg MRI, PET, ELISA, MS)
**Competence and skills**
- outline neurochemical processes in neurological diseases, including neuropathology, mechanisms and clinical symptoms
- demonstrate knowledge about cell and animal models for studying neurochemical processes in neurological diseases.
- retrieve, read and understand scientific literature
- present scientific own and others data to an audience

**Judgement and approach**
- outline several hypothesis on causes for several neurological diseases

**Course content**
The course aims to provide a concise theoretical background on neurochemical processes and methods with a particular focus on neurodegenerative- and psychiatric diseases including Alzheimer’s disease, Parkinson’s disease, ALS and multiples sclerosis as well as schizophrenia, depression and addiction. Several different cell and animal models will be discussed as well as various methods for studying disease mechanisms in vivo and in situ. Finally, a major emphasis will be on clinical aspects of neurodegenerative- and psychiatric diseases, their pathology, risk factors, genetics, diagnosis and treatment strategies. Here a particular focus will include neurochemical analysis and development of novel biomarkers for these diseases.

**Types of instruction**
Kursen kommer att innehålla en blandning av föreläsningar, seminarier, grupparbeten och demonstrationer av laborationer.

**Language of instruction**
The course is given in English.

**Grades**
The grade Pass (G) or Fail (U) is given in this course.

**Types of assessment**
Several oral presentations individual and as a group, followed by discussions with the whole class. Home exam based on a literature project followed by presentation of the literature. Oral examination of the content of both the literature presented and the content of the course. Attendance to all elements of the course is mandatory. A doctoral student who has failed a test twice has the right to change examiners, if it is possible.
A written application should be sent to the Institute.

**Course evaluation**

Course evaluation is performed in writing and anonymous using the common course evaluation template used at Sahlgrenska academy. The course evaluation will take place at the last lecture to ensure acceptable participation. The course responsible teacher will compile and summarize the evaluation results and provide suggestions for the course improvement. Analysis of the course evaluation results and suggestions will be disseminated to the students by the course responsible teacher by mail and published at the University of Gothenburg Learning Management System GUL.

**Other information**

Course literature will provided within a compendium. Relevant references including review articles will be provided.