



**Karolinska  
Institutet**

Course syllabus for

## **Advanced Course in Neuroscience, 30 credits**

Avancerad kurs i neurovetenskap, 30 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Please note that the course syllabus is available in the following versions:

Autumn2012 , Autumn2014

Course code	2QA216
Course name	Advanced Course in Neuroscience
Credits	30 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	Second cycle, has second-cycle course/s as entry requirements
Grading scale	Pass, Fail
Department	Department of Neuroscience
Participating institutions	<ul style="list-style-type: none"><li>• Department of Medical Biochemistry and Biophysics</li><li>• Department of Physiology and Pharmacology</li><li>• Department of Cell and Molecular Biology</li><li>• Department of Neurobiology, Care Sciences and Society</li><li>• Department of Women's and Children's Health</li><li>• Department of Clinical Neuroscience</li></ul>
Decided by	Styrelsen för utbildning
Decision date	2012-01-31
Course syllabus valid from	Autumn 2012

### **Specific entry requirements**

A minimum of 210 credits in medicine, biomedicine, odontology or natural sciences (biology, chemistry) or from studies in engineering with a profile in biotechnology or biomedical technology. At least 7.5 credits should be in neuroscience.

Proficiency in the English language should be documented by an internationally recognized test such as TOEFL: internet based (iBT) with a total score of at least 90 and minimum score of 20 on written test; paper based (PBT) with a total score of at least 575, and minimum score 4.5 on written test; or IELTS (academic) with an overall mark of at least 6.5 and no band less than 6.0; or other documentation that according to regulations certifies the equivalence of English B/English 6 at Swedish upper secondary school.

# Objectives

The general aim of the course is to offer an advanced knowledge base in the field of neuroscience, including both basic and clinical neuroscience. Knowledge and understanding On completion of the course, the student should be able to: - present an overview of what comprises the field of neuroscience. - present deeper theoretical knowledge in the specific research areas covered during the course. - account for the theoretical bases of different diseases of the nervous system. Skills and ability On completion of the course, the student should be able to: - account for and critically evaluate different experimental techniques and methods that are utilised within the field of neuroscience, with regard to the theoretical basis as well as practical applications. - Present research projects orally and in written form. Assessment ability and attitudes On completion of the course, the student should: - Demonstrate a critical and scientific approach. - demonstrate familiarity with safety routines in the laboratory and be able to account for current principles of documentation of experiments and results. - be familiar with ethical aspects on animal and human experimentation.

# Content

The course is divided into two parts and includes both theoretical and experimental studies within neuroscience.

**Research-oriented theory courses, 9 hp** Introductory part, consisting of six week-long theory courses within selected research areas. **Experimental project work in neuroscience, 21 hp** Part 2 consists of an individual 14-week project work under supervision at a neuroscience laboratory, or two periods at different laboratories, each comprising a 7-week project work. Alternatively, the research project can be carried out in the form of a written thesis with an experimental approach. The course part also includes participation in research seminars and journal clubs at the department.

# Teaching methods

The course is an advanced course where the student is assumed be well familiar with the prevalent study routines of university education. The pedagogical platform of the course is based on learning as an active research process. The teaching is given in the form of expert lectures, group assignments, student seminars and experimental work or essay-writing under supervision. Critical studies of scientific articles are also included. Compulsory attendance: Group assignments, written exams, seminars, group meetings, journal clubs and practical work (laboratory sessions or essay writing) are compulsory. More than 10% absence from the practical assignments of the course is compensated for by additional laboratory work (Part 2). More than 20% absence from seminars, group meetings and journal clubs is compensated for by a written essay according to instructions from the course administration.

# Examination

Part 1: The part is examined through separate exams after each theoretical course. Part 2: The research project is formatively examined before the supervisor, and through a final seminar where the student presents her/his own research project during this part. A student who has failed in the regular examination, is entitled to participate in five more examination sessions. If the student has failed six examinations/tests, no more examination session is offered. Each time the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination session. An examination for which the student registered but did not participate in, will not be regarded as an examination session.

# Transitional provisions

Examination will be provided during a period of two years after a close-down of the course.

Examination may be carried out in accordance with a previous reading list during a period of one year after the date of the renewal of the reading list.

## Other directives

Language of instruction: English. Course evaluation will be carried out in accordance with the guidelines established by the Board of Education. The course substitutes an earlier course with course code 2FF010.

## Literature and other teaching aids

*Squire, Larry R*

### **Fundamental neuroscience**

3. ed. : Amsterdam : Elsevier, 2008 - xx, 1255 s.

ISBN:978-0-12-374019-9 LIBRIS-ID:10714021

[Library search](#)

*Kandel, E.R.; Schwartz, J.H.; Jessell, T.M.*

### **Principles of Neural Science**

New York : Elsevier, 2000

ISBN:0-8385-7701-6

[Library search](#)

### **The synaptic organization of the brain**

*Shepherd, Gordon M.*

5. ed. : New York ; a Oxford : Oxford University Press, 2004 - 719 s.

ISBN:0-19-515955-1 LIBRIS-ID:9096739

[Library search](#)