

## Introductory course in Neuroscience

### Some tips to remember for students and teachers!

The Introductory course in Neuroscience is mandatory for PhD students, who start their PhD thesis at the ZNZ. The course consists of two blocks of 14-16 weekly 2-hour lectures to give a broad overview in major topics of Neuroscience, with a focus on research areas that are well represented at the ZNZ.

#### I. Advice for teachers

- ✓ Students are from highly diverse background. Many of them have not studied in Switzerland and have not followed the typical curricula offered by Swiss universities.
- ✓ Most students in the audience have completed their studies in the field of life sciences or have a biomedical background. However, only a minority have a good knowledge of biology or medicinal sciences. Even fewer know something about Neuroscience, and almost none is familiar with your topic.
- ✓ Basic concepts in mathematics, physics, chemistry, informatics or statistics can be vague memories for biology students. An equation is as foreign to a biologist as a restriction site map to a computer scientist!
- ✓ Your lecture should convey the basic concepts, explain key findings that led to the emergence of this field, introduce the methods, and give a flair why this area of research is so important and exciting.
- ✓ Do not pack your lecture with more information than what a good student can ingest within 90 minutes of attentive listening!
- ✓ At the end of your presentations, students should go home feeling they should have selected this topic for their PhD thesis!
- ✓ Guide the students by providing further reading tips (specific book chapters, key reviews accessible on PubMed, etc.).
- ✓ A hand-out is greatly appreciated by the students, but it is left to your discretion how you want to document your lecture.

Remember: even the most basic concepts are familiar only to a handful of students in the audience. It's easy to verify: ask at the beginning of your lecture who knows this topic. You'll be surprised....

## II. Advice for students

- ✓ The introductory course of Neuroscience will confront you with many areas of Neuroscience that are new to you; attending the lectures is the best way to grab the basic concepts, but should be supplemented by reading on these topics. Make sure to receive a list of further reading...
- ✓ The autumn term focuses on brain structure and development, cellular neuroscience, and synaptic transmission; the spring term is devoted to systems and clinical neuroscience. The course can be started indifferently in spring or in autumn, but you will understand many concepts only once you have completed the whole course.
- ✓ Teachers try hard to make their presentation understandable to a heterogeneous audience. Be open-minded when confronted to a foreign topic; you may learn something useful for your thesis.
- ✓ This course is your course. Ask questions, or the lecturer will not realize that an explanation was unclear.
- ✓ Two mandatory exams are part of the Introductory Course – one for the fall and one for the spring term. Should you fail in one exam (grade < 4, which happens rarely), you can repeat it.
- ✓ Seek advice from PhD students of previous years. They can give you good learning tips and help you preparing the exam.
- ✓ All teachers of the Introductory course are members of the ZNZ. Feel free to contact them if you are interested in the topic of their lecture or if you need special advice in this area of Neuroscience.
- ✓ Any criticism and suggestions for improvement are welcome. Contact us anytime, or fill in the evaluation form that you find on the Web.

## Recommended literature

Select one or max. two of these books, depending on your background and topic of interest. They are all available at the main library (HBZ) if you wish to consult them.

### 1) General reference textbooks

#### *Neuroscience*

Dale Purves ; 4th ed.;  
Sunderland, Mass.: Sinauer, 2007  
ISBN 9780878936977

#### *Principles of neural science*

Eric R. Kandel; 5th, rev. ed.  
New York: McGraw Hill, 2008  
ISBN 978-0-07-139011-8

#### *Fundamental neuroscience*

Larry R. Squire; 3rd ed.  
New York: Academic Press, 2008  
ISBN 978-0-12-374019-9

## **2) Shorter books with a specialized focus**

*Cellular and molecular neurophysiology*

Constance Hammond; 3rd ed.  
London: Academic Press, 2008  
ISBN 978-0-12-374127-1

*The synaptic organization of the brain*

Gordon M. Shepherd; 5th ed.  
Oxford: Oxford University Press, 2003  
ISBN 0-19-515955-1

*The biochemical basis of neuropharmacology*

Jack R. Cooper, Floyd E. Bloom, Robert H. Roth; 8th ed.  
Oxford: Oxford University Press, 2003  
ISBN 0-19-514007-9

## **3) Reference textbooks with a specialized focus**

*Basic neurochemistry : molecular, cellular and medical aspects*

George J. Siegel; 7th ed.; Amsterdam: Elsevier, 2006  
ISBN 978-0-12-088397-4

*Fundamental neuroscience for basic and clinical applications*

Duane E. Haines; 3. ed.; Edinburgh: Elsevier Churchill Livingstone, 2005  
ISBN 0-443-06751-1 (pbk.)

*The cognitive neurosciences*

Michael S. Gazzaniga, editor-in-chief ; 3rd ed.  
Cambridge, Mass.: MIT Press, 2004  
ISBN 0-262-07254-8