

COURSE OUTLINE

(1) GENERAL

SCHOOL			
ACADEMIC UNIT	Interdisciplinary Graduate Programme in the BRAIN and MIND sciences		
LEVEL OF STUDIES	7		
COURSE CODE	B&M-209	SEMESTER	Spring
COURSE TITLE	Oculomotor Control		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
<i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>			
Lectures	1	3	
study and analysis of bibliography	2	6	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE	Special background		
<i>general background, special background, specialised general knowledge, skills development</i>			
PREREQUISITE COURSES:	B&M-105 Introduction to Molecular & Cellular Neuroscience B&M -102 Introduction to Systems Neuroscience I. Perception B&M -102A Introduction to Systems Neuroscience II. Movement & Cognitive Functions B&M -103 Introduction to Computational Neuroscience B&M -107 Introduction to Psychology & the Social Neuroscience B&M -106 Introduction to Philosophy of Mind B&M 232 Introduction to Statistics and Programming in Matlab Also recommended: B&M -239 Introduction to Experimental Methods in Neuroscience		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> <p>Exposure to the literature devoted to the experimental analysis of oculomotricity. Students acquire working knowledge regarding the fundamental concepts, methods and major results of more than half a century of research. Students are further trained in the critical evaluation of the literature</p>
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and the presentation of scientific results/arguments to an audience of peers.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>
<i>Production of new research ideas</i>	<i>Others...</i>

- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Criticism and self-criticism

(3) SYLLABUS

1. Overview of the Oculomotor System/Work assignment
2. Psychophysics
3. Extraocular Motoneurons
4. The neural integrator
5. The burst generator
6. The Superior Colliculus: 1. Deeper Layers
7. The Superior Colliculus: 2. Sensorimotor interface.
8. Frontal
9. Supplementary
10. ...and Posterior Eye Fields
11. Vestibulo-ocular reflex
12. Cerebellum
13. Smooth Pursuit
14. Disjunctive Eye Movements
15. Eye-Head Coordination

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Distance learning and face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Integration of ICT in teaching Use of the library and publisher databases/electronic repositories of scientific articles	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i>	Activity	Semester workload
<i>The student's study hours for each learning</i>	Lectures	15
	Study and analysis of bibliography	30
	non-directed study	180

activity are given as well as the hours of non-directed study according to the principles of the ECTS		
	Course total	225
<p align="center">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Evaluation Language: English Assessment Methods: Evaluation of the quality of the presentation and discussion participation.</p> <p>Evaluation criteria are communicated to the students at the beginning of the course.</p>	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Lennerstrand G and Bach-y-Rita P (1975) *Basic mechanisms of ocular motility and their clinical implications: proceedings of the international symposium held in Wenner-Gren Center, Stockholm, June 4-6, 1974*. Pergamon Press, Oxford; New York.
2. Walls, G.L. The evolutionary history of eye movements. *Vision Res.* 2: 69-80, 1962
3. Robinson, D. A. (1981). Control of eye movements. In *Handbook of Physiology: The Nervous System II*, VB Brooks (ed.) pages 1275 – 1320.
4. Fuchs AF, Kaneko CR and Scudder CA, Brainstem control of saccadic eye movements. *Annu Rev Neurosci* 8: 307-337, 1985.
5. Moschovakis AK, Scudder CA and Highstein SM, The microscopic anatomy and physiology of the mammalian saccadic system. *Prog Neurobiol* 50: 133-254, 1996.
6. Moschovakis AK, Models of the oculomotor system. *Encyclopedia of Computational Neuroscience*. Springer, New York, 2013.
7. N.J. Wade and B.W. Tatler (2005) *The Moving Tablet of the Eye – The Origins of Modern Eye Movement Research*. OUP
8. Robinson DA (1981) *The use of control systems analysis in t*

- Related academic journals:
A list is distributed early in the course