

## Research Master Neuroscience Programme

### Course Outline

Course Code	RMNS-1.3
Course Name	Structure and organization of the nervous system
Teaching Methods	Lectures, workshops, self-study, group discussion
Aims of the Course	To obtain an introduction into the functional anatomy of the brain.
Learning Goals	<p>After the course the master student can:</p> <ol style="list-style-type: none"> <li>1. Explain the developmental and anatomical difference between the central and the peripheral nervous systems.</li> <li>2. Describe the anatomical organization of the somatic and autonomic divisions of the peripheral nervous system.</li> <li>3. Detail the relation between the ventricular system and the main parts of the central nervous system.</li> <li>4. Present an overview of brain regions and its related parts of the ventricular system.</li> <li>5. Explain the rules of classification and hierarchy of brain systems</li> <li>6. Schematically outline and explain the main routes involved in sensory perception of touch, pain, hearing, seeing, smelling and tasting.</li> <li>7. Schematically outline and explain the origin and course of the corticospinal system.</li> <li>8. Provide a scheme of the functions and origin of the cranial nerve nuclei.</li> <li>9. Provide information on function and connectivity of the main nuclei and tracts in the human central nervous system</li> <li>10. Can explain the main constituents of the limbic system and outline their function</li> <li>11. Can explain to how the mammalian brain is built on that of, but also different from that of fishes, amphibians, reptiles and birds.</li> <li>12. Can provide several examples how behavioral functions can influence brain structure.</li> <li>13. The master student can search the internet for information on the connections and potential function of a particular brain structure and present this in a coherent presentation for the benefit of their peers.</li> <li>14. The master student can indicate the level at which a given microscopical section has been made and can relate this to nuclei and tracts in that level.</li> </ol>
Target Group	MSc Neuroscience students
Organisation	Erasmus MC – Department of Neuroscience
Level	2 (Master)
Credits	3 ECs
Study load	88 hrs
Testing:	Written exam and group assignments
Language	English
Number of Participants	1st year students MSc Neuroscience curriculum
Location	Erasmus MC – Education Center

Date	November / December
Registration	This course is part of the MSc Neuroscience curriculum. Separate registration is not necessary for admitted students
Absent	If you are unable to attend class, you are kindly requested to report your absence in advance, via <a href="mailto:masterneuroscience@erasmusmc.nl">masterneuroscience@erasmusmc.nl</a> .
Responsibility	Erasmus MC – Department of Neuroscience
Coordination	Dr. T.J.H. (Tom) Ruigrok
Contact	E. Buitenhuis-Linssen E-mail: <a href="mailto:masterneuroscience@erasmusmc.nl">masterneuroscience@erasmusmc.nl</a>
Alumni	LinkedIn Group RM Neuroscience, Erasmus MC <a href="https://www.linkedin.com/groups/8133912">https://www.linkedin.com/groups/8133912</a>

<b>Information</b>	
	<p><b>Summary of the Course</b> This module will provide you with an overview of the functional anatomy of the human brain from cellular to macroscopic level, which you can use as a framework for planning and conducting future research.</p>
	<p><b>Teaching Methods</b> Lectures, workshops, self-study and group assignments/discussions.</p>
<b>Programme</b>	
	<p><b>Content</b> This module provides a broad introduction to the anatomy of the nervous system. The course will start by providing a brief review of the development of the mammalian nervous system, its relation to the ventricular system, and its general function and place in the body. Subsequently, the course will deal with the organization of the peripheral nervous system, with special emphasis on its autonomic subdivisions. The course will continue with an in-depth study of the various components and functional systems in the spinal cord and brainstem and their communication with di- and telencephalic structures. The organization of several functional systems, such as various sensory systems, motor systems and limbic systems will be summarily pointed out. The module will include skills labs where students will study macroscopic and microscopic specimens of human brains. Finally, evolutionary aspects will reviewed by comparing brain structures of various classes of vertebrates. As such, this module will provide the students with an overview of the functional anatomy of the human nervous system, which he/she can use as a framework for future study as well as for planning and conducting future research.</p>
	<p><b>Duration of the Course</b> 5 weeks</p>
	<p><b>Expected Resources for Students</b></p> <ul style="list-style-type: none"> <li>▪ Purves (6<sup>th</sup> edition)</li> <li>▪ Handouts of lecture sheets</li> <li>▪ PDFs of microscopical sections and schemata</li> <li>▪ Human dissection specimens</li> </ul>

	<p><b>Teachers</b> Dr. T.J.H. (Tom) Ruigrok, Dr. D. (Dick) Jaarsma &amp; team</p>
	<p><b>Graduate Attributes</b> If you have attended and actively participated in the classes, passed the group assignments and the written exam with sufficient results, you are awarded 3 ECs.</p>
<p><b>Testing and Assessments</b></p>	
	<p><b>Testing</b> To ensure that these goals were reached, the module will consist of a series of 9 obligatory sessions that will be concluded with a written exam. As a second assessment procedure the master students will show that they are able to find information on a brain structure and to organize this in a coherent oral presentation dealing with anatomical and functional aspects of that particular brain structure. Written and oral exam will provide 70% and 30% of the final grade, respectively.</p>
	<p><b>Testing Procedure</b> The test will be assessed by a MSc faculty member. You will receive a grade on a scale from 1 (worst) to 10 (best). Grade appeal is subject to the rules laid out in the Teaching and Examinations Regulations of Erasmus MC. For every component of the exam, written exam and assignments, a 5,5 or higher must be scored.</p>
<p><b>Quality Management</b></p>	
	<p><b>Course evaluation and development</b> The MSc programme co-ordinators are open for suggestions from course participants on possible improvements. Course adjustments can be made on the basis of your direct feedback. Additionally, at the end of the course, you will receive an invitation for an online survey on the contents and setup of the course.  Course contents and setup are re-evaluated periodically, at least once a year, by the course directors and MSc programme chair members.</p>