

NEUROBIOLOGY

Module designation	<i>Neurobiology</i>
Semester(s) in which the module is taught	2
Person responsible for the module	1. apt. Mahardian Rahmadi, S.Si., M.Sc., Ph.D (Course Coordinator) 2. Prof. apt. Junaidi Khotib, S.Si., M.Kes.,Ph.D
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory / elective / specialisation</i>
Teaching methods	<i>lecture, discussion, assignment</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: Contact hours (structured activities.): 90,67 hours Private study including independent learning activities: 90,67 hours</i>
Credit points	<i>2 SCU / 6 ECTS</i>
Required and recommended prerequisites for joining the module	NA

<p>Module objectives/intended learning outcomes</p>	<p>Students are:</p> <p>LO1: Able to realize excellence based on religious morals (excellence with morality), able to work together, and show a responsible attitude to work in their field of expertise independently</p> <p>LO2: Able to internalize the spirit of independence, struggle, and entrepreneurship</p> <p>LO3: Able to develop and build logical-critical-systematic-creative thinking and scientific conceptions through scientific research, design creation, or artworks of science and technology that pays attention to and applies humanities values through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms</p> <p>LO4: Able to develop a pharmaceutical professional performance with analytical acumen in solving pharmaceutical problems and managing research in the pharmaceutical field related to national and global systems and policies, both inter and inter-disciplinary approaches</p> <p>LO5: Able to access and review information through an Information and Communication Technology (ICT) system, decide on a specific subject of study, maintain the feasibility of implementing research designs, conduct research, analyze data, conclude research results comprehensively, and create strategic issues based on the study that reflect the latest updates in the field of pharmaceutical sciences, and communicate them in the media and scientific forums at the national and international level through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms.</p> <p>LO6: Able to make decisions in the context of solving problems related to science and technology development based on analytical or experimental studies through collaboration with colleagues, colleagues in institutions and research communities at both national and international levels and utilizing research results for the benefit of the user and other communities</p> <p>LO7: Able to analyze natural materials to obtain active ingredients and/or pharmaceutical excipients with due observance of nature conservation.</p> <p>LO8: Able to carry out drug designs through the synthesis of bioactive compounds based on the structure-activity relationship.</p> <p>LO9: Able to carry out molecular manipulation of substances and develop formulations and manufacturing of pharmaceutical preparations with active pharmaceutical ingredients derived from natural products and synthetic compounds through the manufacture of polymorphs, nanoparticles, solid dispersions.</p> <p>LO11: Able to develop systems for evaluating the bioavailability of drugs in the body, pharmaceutical products circulation permits, and their in-vitro and in-vivo evaluations with specific delivery systems with appropriate analytical methods.</p> <p>LO13: Able to design drug development both from natural products and/or synthetic compounds by considering the biological mimicry system.</p> <p>LO14: Able to build drug management systems from active pharmaceutical ingredients to finished products that are ready for therapeutic uses</p>
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Content	<p>This course includes:</p> <ol style="list-style-type: none"> 1. Introduction to neuroscience, its scope and role in the pharmaceutical field 2. Anatomy and morphology of brain organs 3. Nerve cells (including microglia and astrocyte supporting cells) and the nervous system 4. Neurotransmitters, receptors and their activation (dopamineergic, opioidergic, serotonergic, gabaergic systems) 5. Molecular bioactivity of endogenous and exogenous compounds in the nervous system 6. Projecting the nervous system and physiological functions 7. Disorders of the nervous system and pathogenesis 8. Development of drugs that act on the nervous system on the basis of a molecular approach
Exams and assessment formats	<i>Final exam (100 minutes), take-home written assignments</i>
Study and examination requirements	<i>the final grade in the module is composed of 90% take-home assignments 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass</i>
Reading list	<ol style="list-style-type: none"> 1. Joseph R, 2011, Neuroscience, Neuropsychology, Neuropsychiatry, Brain and Mind : Introduction, Primer and Overview 2. Bear MF and Connors BW, 2018, Neuroscience : Exploring the Brain, 4th edition 3. Breedlove SM (Author), Watson NV (Author), 2019, Behavioral Neuroscience, 9th Edition 4. Purves D (Editor), Augustine GJ (Editor), Fitzpatrick D (Editor), Hall WC (Editor), LaMantia AS (Editor), Mooney RD (Editor), Platt ML (Editor), White LE (Editor), 2017, Neuroscience, 6th edition