# Nervous control, behaviour & Special Senses -Year 3 Semester 2 Credits – 2

**Duration: 04 Weeks (20 days)**

| | Topic/ Concept | Objectives | Time | T/L activity | Responsible person |
|---|---|---|---|---|---|
| 1 | **2006-3/SBM-06/01**<br>Pathological processes and the effects of such processes on the central and peripheral nervous system (anatomical and functional)<br>Infections/ Inflammation<br>Demyelination<br>Degeneration<br>Tumors<br>cerebral oedema<br>ischaemia and infarction<br>haemorrhage | **Student should be able to,**<br>1. recall the principles of pathological processes discussed in FM3 in relation to the nervous system<br>2. describe the pathological features of common infections of the nervous system<br>3. describe the basic pathological processes involved in demyelination and degenerative deseases of the brain and nerves<br>4. describe the pathology of neoplasms of the brain , spinal cord and peripheral nerves<br>5. describe the pathogenesis of cerebral oedema and its effects<br>6. describe the pathogenesis of cerebral ischaemia, infarction and haemorrhage and its effects<br>7. describe the aetiopahogenesis of common infections of the nervous system | 5<br>(1) | Lectures | Pathology<br>Microbiology |
| 2 | **2006-3/SBM-06/02**<br>Effects of common poisons on the CNS | 1. recall actions of neurotransmitters<br>2. describe the neurophysiological basis of clinical features associated with these poisons | 1 | Lecture | Medicine |
| 3 | **2006-3/SBM-06/03**<br>Mind and Consciousness | 1. describe the evolution of the definition of the mind<br>2. describe the brain- mind relationship<br>3. describe the neurobiology of mind and behaviour<br>4. describe the religious and cultural models of mind and behaviour | 1 | Lecture | Psychiatry |
| 4 | **2006-3/SBM-06/04**<br>Introduction to abnormal behavior and approaches to mental illness | 1. describe what is abnormal behavior<br>2. list the important neurotransmitters in mental illness<br>3. describe the changes in neurotransmission that lead to psychopathology of depression, delusions and hallucinations | 1 | Lecture | Psychiatry |

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| 5 | **2006-3/SBM-06/05**<br>Effect of substances of abuse ( Alcohol, cocaine, heroin, tobacco, street drugs )on the CNS and Behavior | 1. describe disease model of substance<br>2. list biological mechanisms of substance dependence<br>3. compare and contrast moral model of substance abuse with disease model | 2 | Seminar | Psychiatry and Pharmacology |
| 6 | **2006-3/SBM-06/06**<br>Principles of drug treatment (to modify the altered structure and function) in common CNS disorders<br>General and local anesthetics<br>Alcohol and tobacco abuse<br>Analgesics<br>Anti inflammatory drugs | 1. recall the steps involved in the neurotransmission<br>2. recall the important neurotransmitters and the receptors on which they act<br>3. recall the electrophysiological basis of<br>i. resting membrane potential<br>ii. action potential<br>iii. excitatory post-synaptic potentials<br>iv. inhibitory post-synaptic potentials<br>4. identify possible mechanisms by which drugs can modify the neuronal function<br><br>general anesthetics (1 hour)<br>1. define sleep, amnesia, analgesia, general anaesthesia<br>2. list different phases/planes of general anaesthesia<br>3. classify the agents used for general anaesthesia<br>4. list the drugs used for induction and maintenance of general anesthesia<br>5. describe the mechanism of action, pharmacokinetics, therapeutic and adverse effects, and drug interactions of different anaesthetic drugs.<br>6. compare the pharmacological effects of thiopentone sodium, propofol and ketamine.<br>local anesthetics (1 hour)<br><br>1. recall how an action potential is generated and propagated<br>2. classify local anesthetics (LA)<br>3. describe the mechanisms of action, pharmacokinetics and toxic effects of local anesthetics<br>4. describe the different techniques of use of LA<br>5. describe the risks and benefits of using vasoconstrictors with LA<br>Epilepsy<br>1. define the terms ‘seizure’ and ‘epilepsy’<br>2. classify the epileptic seizures | 10<br><br>2 | Lectures<br><br>SGD | Pharmacology |

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| | | 3. describe the mechanism of action, pharmacokinetics, adverse and toxic effects, important drug interactions of commonly used antiepileptic drugs<br>4. explain the clinical significance of the variability of pharmacokinetics of phenytoin<br>5. list the appropriate anti-epileptic drugs for the treatment of different seizures/epilepsy syndromes.<br>6. describe the basis of drug treatment of status epilepticus<br>7. explain the basis of the safe use of antiepileptic drugs during pregnancy.<br><br>movement disorders<br>1. describe the mechanisms of action, pharmacokinetics, adverse effects of drugs used in the treatment of movement disorders (Parkinsonism, dystonia, chorea, tremors)<br>migraine<br>1. describe the pathophysiology of migraine<br>2. describe the mechanism of action, pharmacokinetics, adverse effects of drugs used in the treatment of migraine<br>neuromuscular junction<br>1. list the drugs/agents that influence the neurotransmission at the neuromuscular junction<br>2. list the types of neuromuscular blockers<br>3. describe the mechanisms of action, pharmacokinetics, clinical uses, adverse effects of drugs acting on the neuromuscular junction.<br>4. name the muscle relaxants commonly used during general anaesthesia<br>5. describe the basis of the use of acetylcholinesterase inhibitors in myasthenia gravis and reversal of the effects of muscle relaxants | | | |
| 7 | **2006-3/SBM-06/07**<br>Basis of psychopharmacology to include biochemistry of neurotransmitters and biochemistry of drug metabolism | anxiolytics/Hypnotics<br><br>1. define<br>i. an anxiolytic<br>ii. a hypnotic<br><br>2. list different classes of commonly used anxiolytic/hypnotic drugs with examples<br><br>3. describe the mechanism of action, pharmacological effects, pharmacokinetics, adverse effects and important drug interactions of | 4 | lecture | Pharmacology |

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| | | the drugs mentioned in 2.<br><br>4. explain the clinical significance of pharmacokinetics of benzodiazepines<br><br>5. describe the toxic effects (acute overdose) of benzodiazepines and basis of the use of an antidote.<br><br>6. describe the problems encountered with the continued use of hypnotics and the measures that can be taken to minimize them.<br>antidepressants<br><br>1. recall the biochemical basis of depressive illness.<br>2. classify the antidepressant drugs (with examples) based on their mechanism of action<br>3. describe the mechanism of action, pharmacokinetics, adverse drug effects, important drug/food interactions of antidepressants<br>4. list the clinical uses of antidepressants other than the treatment of depression<br>5. list the features of antidepressant drug overdose<br><br>antipsychotics<br><br>1. recall the biochemical basis of psychotic illnesses.<br>2. classify the antipsychotic drugs (with examples)<br>3. describe the mechanism of action, pharmacokinetics, adverse drug effects of antipsychotic drugs<br>4. list the clinical uses of antipsychotic drugs<br><br>mood stabilizers<br>1. describe the mechanisms of action, pharmacokinetics, adverse and toxic effects of mood stabilizers<br>dementia<br>1. describe the mechanisms of action, pharmacokinetics, adverse effects of drugs used in the treatment of Dementia | | | |
| **8** | **<u>Skill:</u>** | should be able to perform a complete examination of the nervous system, record the findings accurately, interpret the findings and localise lesions within the nervous system | 1 | Video demonstration of | Medicine<br><br>Lecture/ video demonstration to |

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| | | | 1 | neurological examination & common disorders<br><br>Bed side Clinical examination of the nervous system | be conducted at the beginning of the module |

**Nervous control, behaviour & Special Senses –(Year 3 Semester 2)**
**Module Summary**

| Department | Lectures (hrs) | SGD (hrs) | Seminar (hrs) | Skills (hrs) | Total (hrs) |
|---|---|---|---|---|---|
| Pathology | 5 | | | | 5 |
| Pharmacology | 14 | 2 | 2 | | 18 |
| Psychiatry | 2 | | | | 4 |
| Medicine | 1 | | | 2 | 3 |
| **Total** | **22** | **2** | **2** | **2** | **30** |

**Names and the departments of the teachers involved in the teaching programme**

**Dept. of Pathology**
Dr S Wijetunge
Dr E Siriweera
Dr R Waduge
Dr R Gunawardene

**Dept. of Pharmacology**
Dr U Dangahadeniya
Dr M Rajapakshe

**Dept. of Medicine**
Prof. N Senanayake
Dr. I.B. Gawarammana

**Dept. of Psychiatry**

Dr.D.R.R.Abeysinghe

Dr T Rajapakse

**Examination Format**

| Module | Credits | Exam component and duration | | |
|---|---|---|---|---|
| | | MCQ | SAQ | Viva |
| Nervous control, behaviour & Special Senses | 2 | 1 hr | 1 hr | √ |