|  |  |
| --- | --- |
| **Course Title:**  | Nervous system  |
| **Course Code:** | 411 NEU-7 |
| **Program:** | Bachelor of Medicine and Bachelor of Surgery (MBBS) |
| **Department:**  | N/A |
| **College:** | Medicine |
| **Institution:** | Najran University |

Table of Contents

[A. Course Identification 3](#_Toc951372)

[6. Mode of Instruction (mark all that apply) 3](#_Toc951373)

[B. Course Objectives 3](#_Toc951374)

[1. Course Description 3](#_Toc951375)

[2. Course Main Objective 4](#_Toc951376)

[C. Course Content 4](#_Toc951378)-6

[D. Teaching and Assessment 7](#_Toc951379)

[1. Assessment Tasks for Students 7](#_Toc951381)

[E. Learning Resources and Facilities 8-9](#_Toc951383)

[1.Learning Resources 8](#_Toc951384)

[2. Facilities Required 9](#_Toc951385)

[F. Specification Approval Data 9](#_Toc951387)

# A. Course Identification

|  |  |
| --- | --- |
| **1. Credit hours:7 (5+2)** |  |
| **2. Course type** |
| **a.** | University |  | College |  | Department |  | Others (Program) | **√** |  |
| **b.** | Required | **√** | Elective |  |  |
| **3. Level/year at which this course is offered:** Year 4 - Semester-1 (level 11) |  |
| **4. Pre-requisites for this course** (if any)**:** Phase 1 blocks are prerequisites for Phase 2 |
| **5. Co-requisites for this course** (if any)**:** None |
|  |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage**  |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 97 | 58.1% |
| **2** | **Blended**  |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Distance learning**  |  |  |
| **5** | **Other**  | 70 | 41.9% |

**7. Contact Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Contact Hours** |
| **1** | **Lecture** | 56 |
| **2** | **Laboratory/ Dissection Room (DR)** | 40 |
| **3** | **Tutorial**  |  |
| **4** | **Others** (specify) |  |
| **5** | **Problem-Based Learning (PBL)** | 24 |
| **6** | **Team-Based Learning (TBL)** | 8 |
| **7** | **Self-Directed Learning (SDL)** | 9 |
| **8** | **Bedside teaching (BST)** | 15 |
| **9** | **Skill Lab (SL)** | 15 |
|  | **Total** | 167 |

# B. Course Objectives

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| --- |
| 1. Course Description This course is delivered to the medical students at the level seven/4th year. It has been designed to achieve horizontal and vertical integration of nervous system structure, functions, its common relevant disorders, and their diagnosis and management. The students are expected to develop a problem-solving approach to the relevant nervous system disorders, their diagnoses, and non- pharmacological and pharmacological management. |
|  |
| 2. Course Main Objective |
| **By the end of this course, the students are expected to:**1) **Relate** the structure to functions of the nervous system.2) **Interpret** the symptoms and signs of most common diseases, injuries and disturbances.3) **Discuss** the pathogenesis of various nervous system diseases presentation, investigations (laboratory, radiological, etc.), and management. 4) **Apply** a problem-solving approach to the common nervous system disorders. 5) **Examine** clinically patients with nervous system disorders. |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | Contact Hours |
|  | Introduction to the Block |  |
| Structure and function (37 hrs) |
|  | PBL1 (1st week) | 2 |
|  | External and internal features of cerebrum (anatomy) (Lecture) | 1 |
|  | Diencephalon (anatomy) (Lecture) | 1 |
|  | Skull, cervical vertebrae and their joints (DR)  | 2 |
|  | Functions of cortex (physiology) (Lecture) | 1 |
|  | External features of the brainstem (anatomy) (Lecture) | 1 |
|  | Anatomy of spinal cord (anatomy) (SDL) | 3 |
|  | Cerebrum, diencephalon and spinal cord (DR) | 2 |
|  | External & internal features of cerebellum (anatomy) (Lecture) | 1 |
|  | Ventricular system of the brain (anatomy) (Lecture) | 1 |
|  | Basal nuclei and internal capsule (anatomy) (Lecture) | 1 |
|  | Diencephalon and spinal cord (DR) | 2 |
|  | Brainstem and cerebellum (DR) | 2 |
|  | Functions of the thalamus & hypothalamus (physiology) (Lecture) | 1 |
|  | Physiology of the cerebellum (physiology) (Lecture) | 1 |
|  | Meninges and CSF circulation (anatomy) (Lecture) | 1 |
|  | Basal nuclei and internal capsule (DR) | 2 |
|  | Normal CSF composition (biochemistry) (SDL) | 3 |
|  | CSF analysis and interpretation (biochemistry) (Lecture) | 1 |
|  | PBL 2 (1st week) | 2 |
|  | Transport of substances and composition of nervous tissue (biochemistry) (Lecture) | 1 |
|  | Metabolism of nervous tissue (biochemistry) (Lecture) | 1 |
|  | Histology of central nervous system (practical anatomy) | 2 |
|  | Histology of ganglia and peripheral nervous system (anatomy) (practical) | 2 |
| Sensation (34 hrs) |
|  | PBL1 (2ndweek) | 2 |
|  | Synapse (physiology) (Lecture) | 1 |
|  | Sensory receptors (physiology) (Lecture) | 1 |
|  | Sensation (physiology) (Lecture) | 1 |
|  | Local anesthesia (pharma) (Lecture) | 1 |
|  | Cranial nerves nuclei (1st to 6th) (anatomy) (Lecture) | 1 |
|  | Cranial nerves nuclei (7th to 12th) (anatomy) (Lecture) | 1 |
|  | Neurotransmitters (biochemistry) (Lecture) | 1 |
|  | Ventricular system and meninges (DR) | 2 |
|  | TBL 1 Hydrocephalus (pediatrics) | 2 |
|  | Blood supply of the brain & spinal cord (DR) | 2 |
|  | Superficial sensations (physiology) (SL) | 3 |
|  | Narcotic and non-narcotic analgesics (pharma) (Lecture) | 1 |
|  | Cranial nerves and their central connections (DR) | 2 |
|  | Ascending tracts (anatomy) (Lecture) | 1 |
|  | Descending tracts (anatomy) (Lecture) | 1 |
|  | General anesthesia (Pharma) (Lecture) | 1 |
|  | Ascending & descending tracts and types of fibers in cranial nerves (anatomy) (SDL) | 3 |
|  | PBL2 (2nd week) | 2 |
|  | Normal imaging of CNS (radiology) (practical) | 2 |
|  | Deep sensation (physiology) (SL) | 3 |
| Motor (27 hrs) |
|  | PBL1 (3rd week) | 2 |
|  | Reflexes (physiology) (Lecture) | 1 |
|  | Cerebellar disorders (medicine) (Lecture) | 1 |
|  | TBL2 Head and spinal injury (surgery) | 2 |
|  | Vestibular apparatus and equilibrium (physiology) (Lecture) | 1 |
|  | Upper and lower motor lesions (physiology) (Lecture) | 1 |
|  | Examination of superficial reflexes (physiology) (SL) | 3 |
|  | Basal ganglia physiology (physiology) (Lecture) | 1 |
|  | Examination of deep reflexes (physiology) (SL) | 3 |
|  | Cerebrovascular stroke (medicine) (Lecture) | 1 |
|  | Bedside Teaching (medicine) (BST) | 3 |
|  | Limbic system (physiology) (Lecture) | 1 |
|  | PBL2 (3rd week) | 2 |
|  | Basal ganglia disorders (medicine) (Lecture) | 1 |
|  | Headache (medicine) (Lecture) | 1 |
|  | Tests of coordination (physiology) (SL) | 3 |
| Infectious and neoplastic disorders (24 hrs) |
|  | PBL1 (4th week) | 2 |
|  | Bacterial Causes of meningitis (microbiology) | 1 |
|  | Viral and fungal infections of CNS | 1 |
|  | Parasitic infection of CNS (microbiology) | 1 |
|  | CNS infections (microbiology) Practical | 2 |
|  | Diagnostic methods of infectious diseases affecting nervous system (microbiology) (practical) | 2 |
|  | Infectious diseases of nervous system (medicine) (Lecture) | 1 |
|  | Pharmacology of infectious diseases of nervous system (pharma) (Lecture) | 1 |
|  | Nervous system pharmacology 1 (Practical) | 2 |
|  | TBL3 Epilepsy (medicine) | 2 |
|  | Normal and abnormal imaging 1 (radiology) (practical) | 2 |
|  | Normal and abnormal imaging 2 (radiology) (practical) | 2 |
|  | Nervous tissue tumors (pathology) (Lecture) | 1 |
|  | Nervous tissue tumors (Pathology) (practical) | 2 |
|  | PBL2 (4th week) | 2 |
| Neurosurgery (21 hrs) |
|  | PBL1 (5th week) | 2 |
|  | Development & anomalies of brain and spinal cord (anatomy) (Lecture) | 1 |
|  | Increased intracranial pressure (surgery) (Lecture) | 1 |
|  | Head Injury (surgery) (Lecture) | 1 |
|  | Spinal cord trauma (surgery) (Lecture) | 1 |
|  | Common neurosurgery procedures and intervention (Surgery) (Lecture) | 1 |
|  | Central muscle relaxants (pharma) (Lecture) | 1 |
|  | Congenital anomalies of CNS (pediatrics) (Lecture) | 1 |
|  | Bedside teaching (neurologic evaluation in pediatrics) (BST) | 3 |
|  | Seizures in childhood (pediatrics) (Lecture) | 1 |
|  | Antiepileptic drugs (pharma) (Lecture) | 1 |
|  | Bedside teaching (pediatrics) (BST) | 3 |
|  | PBL2 (5th week) | 2 |
|  | EEG practical (physiology) (practical) | 2 |
| Behavioural and degenerative disorder (21 hrs) |
|  | PBL1 (6th week) | 2 |
|  | Memory and its disorders (physiology) (Lecture) | 1 |
|  | Sleep (physiology) (Lecture) | 1 |
|  | Sedatives & hypnotics (pharma) (Lecture) | 1 |
|  | Speech & its disorders (physiology) (Lecture) | 1 |
|  | Drug abuse and psychotropic drugs (pharma) (Lecture) | 1 |
|  | Antipsychotic and anti-depressant Drugs (pharma) (Lecture) | 1 |
|  | Bedside teaching (medicine) (BST) | 3 |
|  | Degenerative diseases of the central nervous system and peripheral nervous system pathology (pathology) (Lecture) | 1 |
|  | Degenerative disorders of the central nervous system (pathology) (Practical) | 2 |
|  | TBL 4 Peripheral neuropathy (medicine) | 2 |
|  | Anti-parkinsonian drugs and treatment of Alzheimer and other types of dementia (pharma) (Lecture) | 1 |
|  | Nervous system pharmacology 2 (Practical) | 2 |
|  | PBL2 (6th week) | 2 |
| Exam (3) |
|  | Bedside teaching (medicine) (BST) | 3 |
| Total  |  |

# D. Teaching and Assessment

## 1. Assessment Tasks for Students

| **#** | **Assessment task\***  | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Mid-block exam  | Week 4 | 20 % |
| **2** | TBL assessment | Weeks 2-5 | 10% |
| **3** | PBL assessment | Weeks 1-6 | 10 % |
| **4** | End of course exams:- Written: MCQs (40%) - Practical: OSPE/OSCE (20%) | Week 7 | 60% |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Learning Resources and Facilities

## 1.Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | * 1. ANATOMY
1. Snell Clinical Neuroanatomy. Richard S. Snell. 7th Ed
2. Gray’s Anatomy for Students. Richard L. Drake, Wayne Vogal and Adam W. Mitchell. 3rd Ed
	1. EMPERYOLOGY
3. Langman’s Medical Embryology. T. W. Sadler. 13th Ed
4. The Developing Human: Clinically Oriented Embryology. Keith L. Moore, T. V. N Persaud and Mark G. Torchia. 9th Ed
	1. HISTOLOGY:
5. WHEATER’S Functional Histology: A Text and Colour Atlas. Barbara Young, Phillip Woodford and Geraldine O’Dowd. 6th Ed.
6. JUNQUEIRA’S Basic Histology: text and atlas. Antony L. Mescher. 14th Ed.
	1. PHYSIOLOGY:
7. Ganong’s Review of Medical Physiology.Kim Barret et al. 25th Ed. 2016
8. Guyton ad Hall text book of medical physiology. John E. Hall. 13th Ed. 2016
	1. BIOCHEMISTRY:
9. Medical biochmistry. John W Baynes and Mark H Dominiczak. 3rd Ed.
10. Harpers illustrated biochemistry.28th Ed.
	1. PHARMACOOGY:
11. Goodman and Gillman’s The Pharmacological Basis of THERAPEUTICS. Laurance L. Brunton, John S. Lazo and Keith L. Parker. 11th Ed
12. Basic & Clinical Pharmacology by B.G. Katzung.11th Ed.
	1. PATHOLOGY:
13. Robbins Basic Pathology. Kumar, Abbas and Aster. 9th Ed.
14. Muir’s Text Book of Pathology, David A Levison et al.14th Ed.
	1. MICROBIOLOGY:
15. Jawetz, Melnick, &Adelberg's Medical Microbiology. 27th Ed.
16. Markell and Voge’s Medical parasitology. 9th Ed.
	1. MEDICINE:
17. Current Medical Diagnosis &treatment.Maxine A. Papadakis and Stephen J. McPhee. 55th Ed. 2016
18. Harrison’s principles of internal medicine.Kasper et al.19th Ed.

10. SURGERY: 1) Handbook of neurosurgery by Mark Greenberg 9th edition 2)Essential Neurosurgery by Andrew H. Kaye 3rd edition |
| **Essential References Materials** | 1. Grant’s Atlas of Anatomy, Anne M.R.Agur, Arthur F. Dalley, 13th edition 2013
2. Merkell and Voge’s Medical Parasitology, David T. John et al, 9th edition.2006.
3. Wheater’s basic histopathology
4. Di Fiore’s atlas of histology
5. Diagnostic molecular pathology, William B. Coleman & Gregory J. Tsongalis
 |
| **Electronic Materials** | 1. Saudi Digital Library <https://sdl.edu.sa>
2. <http://www.adameducation.com/interactive-physiology>
3. http://www.webpath.med.utah.edu
 |
| **Other Learning Materials** | BMC Neurology Journal, Neurosurgery and Neurology Review by Nature, Nature neuroscience. |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**(Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Lecture room suitable for students.
2. Laboratories (dissection room-DR, physiology, biochemistry, microbiology, pathology, pharmacology and clinical skill lab) suitable for students.
3. Teaching hospital for bedside teaching
 |
| **Technology Resources** (AV, data show, Smart Board, software, etc.) | 1. Computers and multimedia projectors in lecture room, PBL room, TBL room and laboratories.
2. There is a need for computers with network and internet access for student learning.
 |
| **Other Resources** (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Library is supplied with references, textbooks, and electronic resources |

# F. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** |  |
| **Reference No.** |  |
| **Date** |  |