COURSE SPECIFICATION

Faculty of Medicine- Mansoura University

(A) Administrative information

(1) Programme offering the course:	Post graduate M D Neurosurgery
(2) Department offering the programme:	Neurosurgery
(3) Department responsible for teaching the course:	Neurosurgery
(4) Part of the programme:	Second part
(5) Date of approval by the Department`s council	4-5-2016
(6) Date of last approval of programme specification by Faculty council	9/8/2016
(7) Course title:	Neurosurgery
(8) Course code:	NSUR 632
(9) Total teaching hours:	**General Neurosurgery Modules (I & II)** 165 hours lectures 90 hours clinical, 120 hours operative **Special Neurosurgery Modules(III & IV)** 180 hours lectures 120 hours clinical, 120 hours operative
(10) Credit hours	**General Neurosurgery(I & II)** 11 hours lectures

	3 hours clinical, 4 hours operative **Special Neurosurgery(III & IV)** 12 hours lectures 4 hours clinical, 4 hours operative

(B) Professional information

(1) Course Aims:

The broad aims of the course are as follows: (either to be written in items or as a paragraph)

1- Prepare the candidate to provide the primary care of general and basic neurosurgical problems to patients.
2- Provide the candidate to develop the skills of diagnosis and differential diagnosis of common neurosurgical problems.
3- Provide the trainee to develop the guidelines for the current management of surgical lesions with the anticipation of difficulties and complications and their management.
4- Prepare the candidate to Describe the innovative neurosurgical techniques.
5- Encourage the candidate to Adopt the concept of subspecialization in neurosurgery.

(2) Intended Learning Outcomes (ILOs):

Intended learning outcomes (ILOs); Are four main categories: knowledge & understanding to be gained, intellectual qualities, professional/practical and transferable skills.

On successful completion of the course, the candidate will be able to:

A- Knowledge and Understanding

A1- Recognize the clinical manifestations of neurological diseases .
A2- Identify the effects of neurological diseases on other body organs .
A3- Identify the diagnosis, differential diagnosis and treatment of common neurosurgical problems of the spine and peripheral nerves.
A4- Recognize the sequale of head injuries and outline their management.
A5-classify central nervous system infectious diseases
A6-recognize neurosurgical problems during pregnancy
A7-identify cranio-cervical junction problems
A8-discuss different types of intracranial hemorrhage
A9- identify movement disorders and functional neurosurgery
A10-discuss different types of hydrocephalus and its mechanism
A11- identify spinal tumors either pediatric or adult
A12-recognise diagnosis of brain death
A13-recognise cerebrovascular diseases and its management
A14-Identify congenital anomalies of central nervous system
A15-recognize different types of pituitary tumors
A16- identify commom paediatric brain tumors
A17-identify principles of streotaxy in neurosurgery
A18-recognize basics of endovascular procedures
A19-idenfify minimally invasive approaches in neurosurgery
A20-identify basics of pain therapy

The Postgraduate Degree provides opportunities for candidates to achieve and demonstrate the following intellectual qualities:

B- Intellectual skills

B1- Develop an algorithm for the diagnosis and differential diagnosis of brain and spinal infections. Also to compare and analyze the different lines of their treatment.

B2- Develop a comprehensive approach to neurosurgical problems related to disturbed CSF dynamics, their diagnosis and treatment.

B3- Develop a comprehensive approach to neurosurgical problems related to physiological conditions (pregnancy) or pathological diseases (HIV infection).

B4- Develop an algorithm for the diagnosis and differential diagnosis of CNS tumors.

B5- Evaluate the guidelines for treatment of traumatic brain injury.

B6 -outline different lines of management of central nervous system hemorrhage

B7-interpret radiological findings related to neurosurgical diseases

B8-adopt guide lines of management of spinal injury

B9-adopt guide lines of skull base and orbital lesions management

B10- follow recent advances for radiosurgery and functional neurosurgery

B11- classify brain tumors

B13- classify spinal tumors

B14- adopt minimally invasive approaches in neurosurgery

B15-follow guideline in management of neurovascular lesions

C- Professional/practical skills

C1- Apply the different surgical treatment modalities to the treatment of Developmental central nervous system anomalies .

C2- Apply the different surgical treatment modalities to the treatment of brain Tumors.

C3- Interpret neuroradiological findings

C4- perform clinical history taking and neurological examination.

C5- perform neurosurgical procedures under supervision of neurosurgical tutor.

C6-Perform CSF diversion procedures

C7-applay head fixation and patient positioning in the operative theater

C8-Perform burr holes and craniotomy

C9-Perform trans fontanel tapping

C10-Dissect para-spinal muscles in different spinal procedures

C11-Evacuate post traumatic acute epidural hematoma

C12- evacuate chronic subdural hematoma

C13-Tapping of brain abscess

C14-assist in major neurosurgical procedures

C15-perform repair of meningeocele and meningeomyelocele

C16-perform decompression of peripheral nerves

C17- perform repair of peripheral nerve injury

C18-assist in neurovascular procedures

C19-assist in functional and radosurgical procedures

C20- assist in neuroendoscopic procedures either spinal or cranial

C21-perform cranioplasty

C22-assist in surgery of spondylolithesis

C23-assist in neurovascular procedures

C24-perform diagnostic digital subtraction angiography

C25-assist in operative procedures for surgery of different spinal tumors

C26-assist in skull base surgery

D- Communication & Transferable skills

D1- Enhance tutorial and research capabilities.
D2- Participate in patient education and family counseling.
D3- Work effectively as a member of a neurosurgical team.
D4-communicate effectively with patients, families and the public
D5-understand medical ethics in neurosurgery
D6-communicate effectively with physicians, other health professionals and health related agencies

(3) Course content:

I- General Neurosurgery

الفصل الدراسى الثالث والرابع مدة كل منهما ١٥ أسبوع

Credit hours: 12 hours lectures + 3 hours clinical teaching + 4 hours operative training

Module (I): General Neurosurgery

Table of Lectures

Lecture topics	Lectures 90 hours
1- General care	4
2- Neurocritical care	4
3- Neuro-opthalmology	4
4- Neuro-otology	3
5- Neuro-urology	3
6- Radiology of the brain	3
7- Radiology of the spine	3
8- Principles of radiotherapy	3
9- Principles of chemotherapy	3
10- Hydrocephalus in infants and children	3
11- Adult hydrocephalus	3
12- CSF shunting procedures	3
13- Pseudotumor cerebri	3
14- CSF fistulas	4
15- Syringomyelia	2
16- Neurocutaneous syndromes	3

17- Brain death	3
18- Infections of the brain	4
19- Infections of the spine	4
20- Acquired immune deficiency syndrome	2
21- Neurosurgical problems during pregnancy	2
22- Cranial developmental anomalies	4
23- Spinal dysraphism	4
24- Spontaneous intracerebral hemorrhage	4
25- Spinal haematoma	3
26-plan for educational and research practice	2
27-medical ethics in neurosurgery	2
26- Subarachnoid hemorrhage	4

Module (I): General Neurosurgery

Table of clinical and operative training

Clinical , operative skill	**Teaching hours** **45 clinical, 60 operative**
1- Cranial developmental anomalies	**3**
2- Spinal dysraphism	**3**
3- Neuro-opthalmology	**3**
4- Neuro-otology	**3**
5-subarachnoid hemorrhage	**3**
6- Radiology of the brain	**3**
7- Radiology of the spine	**3**
8-- Hydrocephalus	**3**
9-idiopathic intracranial hypertension	**3**

10-Infections of the brain	**3**
11-Infections of the spine	**3**
12-Spontaneous intracerebral hemorrhage	**3**
13- CSF fistulas	**3**
14- Syringomyelia	**3**
15- Neurocutaneous syndromes	**3**
operative training	
1- decompressive **craniotomy**	**6**
2-External ventricular drainage	**6**
3-V.P. shunt	**6**
4-Taping of brain abscess	**6**
5-evacuation of extradural haemorrhage	**6**
6-evacuation of subdural haemorrhage	**6**
7-evacuation of intracerebral haematoma (first assistant)	**6**
8-meningeomylocele repair	**6**
9-epidural spinal abscess	**6**
10- repair of CSF fistula (first assistant)	**6**

Module (II): General Neurosurgery

Table of Lectures

Lecture topics	Lectures 75 hours
27- Brain gliomas	3
28- Brain meningiomas	3
29- Pituitary tumors	3
30- Schwannomas	3
31- Haemangioblastoma	3
32- Dermoid epidermoid tumors	3
33- Ventricular tumors	3
34- CNS lymphomas	3
35- Metastatic brain tumors	3
36- Scalp and skull tumors	3
37- Tumors of the spine	3
38- Spinal cord tumors	3
39- Peripheral nerve tumors	3
40- Management of traumatic brain injury	4
41- Sequlae & outcome of traumatic brain injury	4
42- Cranioplasty	3
43- Peripheral nerve injuries	4
44- Neural entrapment syndromes	3
45- Vertebral column and spinal cord injuries	4
46- Brachial plexus injuries	4
47- Non-discogenic low backache	3
48- Lumbar disc disease	3
49- Cervical disc disease	3
50- Thoracic disc disease	3
51- Spondylolisthesis	3

Module (I I): **General Neurosurgery**

Table of clinical and operative training

Clinical , operative skill	**Teaching hours** **45 clinical, 60 operative**
1-brain tumors	**5**
2- spinal tumors	**5**
3- spinal cord tumors	**5**
4-pituitary tumors	**5**
5-Head injury	**5**
6-Spinal injury	**5**
7-peripheral nerve injury	**5**
8-degenrative spinal diseases	**5**
9- Scalp and skull tumors	**3**
10-Cranioplasty	**2**
operative training	
1- Dissection of paraspinal muscles	**10**
Lumber disc surgery **Cervical disc surgery** **Dorsal disc surgery**	
2- Spinal tumors **Extradural**	**10**

Intradural **intramedullary**	
3-Spondylolithesis surgery	**10**
4- Cranioplsty	**10**
5- Different types of craniotomy **frontal** **Temporal** **Occipital** **Parasaggital**	**10**
6- Nerve repair and decompression **Median nerve** **Ulnar nerve** **Radial nerve** **Carpal tunnel syndrome** **Brachial plexus** **Sciatic nerve** **Common peroneal nerve**	**10**

I 1- Special Neurosurgery

Module (I I 1): Special Neurosurgery

Lecture topics	Lectures 90 hours
1- Neurophysiologic monitoring	3
2- ICP monitoring	2
3- Intraoperative localization of brain lesions	3
4- Intraoperative localization of spinal lesions	3
5- Frame based stereotaxy	3
6- Frameless stereotaxy	3
7- Neuroendoscopy	3
8- Radiosurgery	3
9- Functional MRI	3
10- Neurotransplantation (including stem cells) in the CNS	3
11- The osteoporotic spine	3
12- Craniovertebral junction anomalies	3
13- Spinal deformities	3
14- Instrumentation in spinal surgery	3
15- Spinal surgery: complications and revision surgery	3
16- Minimally invasive approaches to the spine	3
17- Motion preservation in spinal surgery	3
18- Sympathectomy	3
19- Surgery for cerebral aneurysms	3
20- Surgery for arteriovenous malformations	3
21- Surgery for arteriovenous fistulas and cavernomas	3
21- Cerebral protection	2
23- Carotid endarterectomy, angioplasty and stenting	2
24- Surgery for occlusive cerebrovascular disease	2
25- Cerebral venous and sinus thrombosis	2
26- Endovascular surgery	2

Table of clinical and operative training

Clinical , operative skill	**Teaching hours** **60 clinical, 60 operative**
1- cerebral aneurysms	**6**
2- **cerebral arteriovenous malformation**	**6**
3- Craniovertebral junction anomalies	**6**
4- arteriovenous fistulas and cavernomas	**6**
5- Cerebral venous and sinus thrombosis	**6**
6- Minimally invasive approaches to the spine	**6**
7- The osteoporotic spine	**6**
8-- Sympathectomy	**6**
9- Carotid endarterectomy, angioplasty and stenting	**6**
10- Instrumentation in spinal surgery	**6**
operative training	
1-Intracranial aneurysms(assistant)	**10**
2-Intracranial arteriovenous malformation (assistant)	**10**
3- Minimally invasive approaches to the spine(assistant)	**10**
4-diagnostic angiography (assistant)	**10**

5- neuroendoscopic procedures (assistant)	**10**
6- radiosurgery (assistant)	**10**

Module (I V): Special Neurosurgery

Lecture topics	Lectures 90 hours
27- Pediatric brain tumors	4
28- Pediatric spinal tumors	4
29- Pediatric head injury	3
30- Pediatric spinal injury	3
31- Craniosynostosis	3
32- Cerebrovascular diseases in infants and children	3
33- Intracerebral hemorrhage in the newborn	3
34- Treatment of torticollis	3
35- Treatment of spasticity	3
36- Cerebral palsy: spasticity and dystonia	3
37- Awake craniotomy	3
38- Deep brain stimulation	3
39- Preoperative evaluation for epilepsy surgery	3
40-Intraoperative mapping & monitoring for cortical resections	3
41- Epilepsy surgery: techniques, outcome & complications	3
42- Surgery for movement disorders: rationale	3
43- Surgery for movement disorders: techniques	3
44- Psychosurgery	3
45- Microneurovascular compression syndromes	3
46- Neurostimulation for intractable pain	3
47- Destructive procedures for intractable pain	3
48- Advances in adjuvant treatment of gliomas	3
49- Orbital tumors	3
50- Skull base tumors	3
51- Skull base techniques	3

Table of clinical and operative training

Clinical , operative skill	**Teaching hours** **60 clinical, 60 operative**
1- paediatric brain tumors	**6**
2- **paediatric spinal tumors**	**6**
3- **paediatric spinal and head injuries**	**6**
4- Craniosynostosis	**6**
5- movement disorders	**6**
6- Microneurovascular compression syndromes	**6**
7- The osteoporotic spine	**6**
8- Skull base tumors	**6**
9- Orbital tumors	**6**
10- **pain therapy**	**6**
operative training	
1- paediatric brain and spinal tumors (assistant)	**10**
2- epilepsy surgery (assistant)	**10**
3- psychosurgery (assistant)	**10**
4-surgical procedures for pain (assistant)	**10**

5- surgical procedures for movement disorders (assistant)	**10**
6- Skull base techniques (assistant)	**10**

(4) Teaching methods:

4.1: Power point presentation.

4.2: Microteaching and self learning.

4.3: Clinical discussion

4.4: Operative demonstration

4.5: Operative video presentation

(5) Assessment methods

5.1: Written exam. For assessment of knowledge and intellectual skills

5.2: MCQ For assessment of knowledge and intellectual skills

5.3: Structured oral exam For assessment of A1,A2,A3,A4,A5,A6,A7,A8,A9,A10,A11,A12,A13,A14,15,16,A17,A18,A19,A20

5.4: OSCE Clinical exam. For assessment of B1,B2,B3,B4,B5,B6,B7,B8,B9,B10,11,B12,B13,B14,B15

5.5: OSPE Practical exam. For assessment of C1,C2.C3.C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15,C16,C17,C18,C19, C20,21,C22,C23,C24,C25,C26,D1,D2,D3,D4,D5,D6

5.6 COMMENTARY For assessment of C6,C7,C8

Module 1&11

Written exam 228 marks

COMMENTARY	60 marks
MCQ	72 marks
Structured oral exam	100 marks
OSCE Clinical exam	100 marks
OSPE Practical exam	100 marks

(7) References of the course:

6.1: Hand books: Hand Book of Neurosurgery

6.2: Text books: Youman's Neurosurgery, Wilkin's Neurosurgery, Essential of neurosurgery, operative and surgical approaches in neurosurgery

6.3: Journals: Journal of Neurosurgery, Neurosurgery and surgical neurology

6.4: Websites: www.neurosurgery on line .com

(8) Facilities and resources mandatory for course completion:

- Lectures
- Library
- Internet
- Journal Club
- Clinical rounds
- Operative sessions

Course coordinator: PROF. DR. Nabil Mansour Ali
Prof. Dr. Mohamed Ali Kassem

Head of the department: PROF. DR. Nabil Mansour Ali

Date: 4-5-2016