MEDICAL DOCTORATE (M.D.) DEGREE PROGRAM AND COURSES SPECIFICATIONS FOR NEUROSURGERY

(According to currently applied Credit points bylaws)

Department of Neurosurgery

Faculty of medicine

Assiut University

2021-2022

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M. D. degree of Neurosurgery

A. Basic Information

- **Program Title:** Neurosurgery
- **Nature of the program: Single.**
- **Responsible Department:** Neurosurgery
- **Program Academic Director (Head of the Department):**
  Professor: Mohamed Abdelbasset Khallaf
- **Coordinator (s):**
  - Principle coordinator: Prof. Roshdy EL Khayat
  - Assistant coordinator(s): Prof. Mohamed Taghian- Dr Wael Mohammed ALi
- **Internal evaluators:** Professor Roshdy Al Khayat, Prof. Radwan Nouby,
- **External evaluator Prof. Dr Amr El Samman**
- **Date of Approval by the Faculty of Medicine Council of Assiut University: 23 / 9 / 2014**
- **Date of most recent approval of program specification by the Faculty of Medicine Council of Assiut University:27 / 11 / 2022**
- **Total number of courses: 6 courses + 2 Elective courses**

B. Professional Information

1- Program aims

I/1. -To enable candidates to keep with satisfactory standards of Neurosurgery patients care by teaching high level of clinical skills, bedside care skills, in addition to update medical knowledge as well as clinical experience and competence in the area of Neurosurgery

1/2. - To be able to participate in research work and to give the candidate a chance to join an academic job and to teach young neurosurgeons

1/3- To be able to independently operate various neurosurgical operations.

1/4. To enable candidates to describe the basic ethical and medicolegal principles relevant to Neurosurgery

2-Intended learning outcomes (ILOs) *for the whole program*:

2/1Knowledge and understanding:

A. Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio – behavioral science relevant to his speciality as well as the evidence – based application of this knowledge to patient care.
B. Explain basics, methodology, tools and ethics of scientific medical, clinical research.
C. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Neurosurgery.

D. Mention principles and measurements of quality assurance and quality improvement in medical education and in clinical practice of Neurosurgery.
E. Mention health care system, public health and health policy, issues relevant to Neurosurgery and principles and methods of system – based improvement of patient care in common health problems of the field of Neurosurgery.

2/2 Intellectual outcomes

A. Apply the basic and clinically supportive sciences, which are appropriate to Neurosurgery related conditions.

B. Demonstrate an investigatory and analytic thinking "problem – solving " approaches to clinical situation related to Neurosurgery.
C. plan research projects.

D. Write scientific papers.

E. Participate in clinical risk management as a part of clinical governance.

F. Plan for quality improvement in the field of medical education and clinical practice in Neurosurgery.
G. Create / innovate plans, systems, and other issues for improvement of performance in Neurosurgery.
H. Present and defend his / her data in front of a panel of experts.

I. Formulate management plans and alternative decisions in different situations in the field of the Neurosurgery.

2/3 Skills

2/3/1 Practical skills (Patient Care)

Students will be able to:

A. Provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

p.s. Extensive level means in-depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in field of practice.

B. Provide extensive level of patient care *for patients with all common diagnoses and for uncomplicated procedures* related to *Neurosurgery.*

C. Provide extensive level of patient care *for non-routine, complicated patients and under increasingly difficult circumstances*, while demonstrating compassionate, appropriate and effective care.

D. Perform diagnostic and therapeutic procedures considered essential in the field of Neurosurgery.

E. Handles unexpected complications, while demonstrating compassion and sensitivity to patient needs and concerns.

F. Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families in Neurosurgery related situations.

G, Gather essential and accurate information about patients of Neurosurgery related conditions.

H. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-

to-date scientific evidence and clinical judgment for Neurosurgery related conditions.

I. Develop and carry out patient management plans for **Neurosurgery** related conditions.

J. Counsel and educate patients and their families about Neurosurgery related conditions.

K. Use information technology to support patient care decisions and patient education in all Neurosurgery related clinical situations.

L. Perform competently all medical and invasive procedures considered essential for Neurosurgery related conditions / area of practices.

M. Provide health care services aimed at preventing Neurosurgery related health problems.

N. Lead health care professionals, including those from other disciplines, to provide patient-focused care in Neurosurgery related conditions**.**

O. Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)

2/3/2 General skills

Including:

- Practice-based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-based Practice

Practice-Based Learning and Improvement

A. Demonstrate continuous evaluation of different types of care provision to patients in the different area of Neurosurgery
B. Appraise scientific evidence.
C. Continuously improve patient care based on constant self-evaluation and life-long learning.
D. Participate in clinical audit and research projects.
E. Practice skills of evidence-based Medicine (EBM).
F. Educate and evaluate students, residents and other health professionals.
G. Design logbooks.
H. Design clinical guidelines and standard protocols of management.
I. Appraise evidence from scientific studies related to the patients' health problems.
J. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.
K. Use information technology to manage information, access on-line medical information; for the important topics.

Interpersonal and Communication Skills

L. Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:-

- Present a case.
- Write a consultation note.
- Inform patients of a diagnosis and therapeutic plan completing and maintaining comprehensive.
- Timely and legible medical records.
- Teamwork skills.

M. Create and sustain a therapeutic and ethically sound relationship with patients.

N. Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.

O. Work effectively with others as a member or leader of a health care team or other professional group.

Professionalism

P. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.

Q. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.

R. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.

Systems-Based Practice

S. Work effectively in health care delivery settings and systems related to Neurosurgery including good administrative and time management.

T. Practice cost-effective health care and resource allocation that does not compromise quality of care.

U. Advocate for quality patient care and assist patients in dealing with system complexities.

V. Design, monitor and evaluate specification of under and post graduate course and programs.

W. Act as a chair man for scientific meetings including time management.

3- Program Academic Reference Standards (ARS) (Annex 2)

Academic standards for Medical Doctorate (MD) degree in Neurosurgery

Assiut Faculty of Medicine developed MD degree programs' academic standards for different clinical specialties.

In preparing these standards, the General Academic Reference Standards for post graduate programs (GARS) were adopted. These standards set out the graduate attributes and academic characteristics that are expected to be achieved by the end of the program.

These standards were approved by the faculty council on 3/2010. These standards were revised and approved without changes by the Faculty Council on 23- 9- 2014.

These standards were re- revised and approved without changes by the Faculty Council on 27- 11- 2022.

4- Program External References (Benchmarks)

1. ACGME (Accreditation Council for Graduate Medical Education).
   http://www.acgme.org/acWebsite/navPages/nav_Public.asp
2. The American Board of neurological Surgery/
   http/ www.abns.org/content/default.asp

Comparison between program and external reference		
Item	**MD Neurosurgery**	**The American Board of neurological Surgery**
Goals	Matched	Matched
ILOS	Matched	Matched
Duration	**4-6 years**	5 years
Requirement	Different	Different
Program structure	Different	Different

5- Program Structure

A. Duration of program: 4-6 years

B. Structure of the program:

Total number of credit point = 420 CP

Master degree: 180 credit point

Didactic #: 37 (23.1%), practical 123 (76.9%), total 160 CP

Thesis and researches: 80 CP (33.3%)

First part

Didactic 10 CP (100 %), practical 0(0 %).total 10 CP

Second part

Didactic 24 , (16.3 %) practical 123 (83.7 %) total 147

According the currently applied bylaws:

Total courses:160 credit point

Compulsory courses: 157 credit point (98.1%)

Elective courses: 3 credit point (1.9%)

	Credit points	% from total
Basic science courses	10	4.1%
Humanity and social courses	3	1.2%
Speciality courses	147	61.3%
Others (Computer, …)		0
Field training	123	51.3%
Thesis	40	16.7%
2 published researches	40	16.7%

C- Program Time Table

Duration of program 4 years (could be extended at maximum to 6 years) divided into

- Part 1

Program-related basic science courses

- Medical statistic
- Research methodology
- Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Students are allowed to sit the exams of these courses after 6 months from applying to the M D degree.

Students are allowed to sit the exams of the remaining basic science courses after 12 months from applying to the MD degree.

- Thesis and 2 published researches

For the M D thesis;

MD thesis subject should be officially registered within 1 year from application to the MD degree,

Discussion and acceptance of the thesis should not be set before 24 months from registering the M D subject;

It could be discussed and accepted either before or after passing the second part of examination

- Part 2

Program –related speciality courses and ILOs

Students are not allowed to sit the exams of these courses before 4 years from applying to the MD degree.

Two elective courses can be set during either the 1st or 2nd parts.

The students pass if they get 50% from the written exams and 60% from oral exams, 60% from clinical/practical exams of each course and 60% of summation of the written exams, oral and clinical/practical exams of each course

Total degrees 1700 marks.

500 marks for first part
1200 for second part
Written exam 40% - 70%.
Clinical /practical and oral exams 30% - 60%.

Curriculum Structure: (Courses):

Levels and courses of the program:

Courses and student work load list	Course Code	Core Credit points		
		Lectures	training	total
First Part				
Basic science courses (10 CP) Course 1: Medical Statistics and computer Course 2: Research Methodology Course 3: - Medicolegal Aspects & Ethics in Medical Practice and Scientific Research Course 4:Surgical neuroanatomy Course 5:Sugical Neuro-Pathology	 FAC309A FAC309B FAC310C NES314A NES314B	 1 1 1 3.5 3.5	 - - - - -	 1 1 1 3.5 3.5
Elective courses*	3 CP			
Elective course 1 Elective course 2		1.5 1.5	- -	1.5 1.5
Thesis		40 CP		
Published researches**		40 CP		
Second Part	Speciality courses 24 CP Speciality Clinical Work (log Book) 123 CP			
Speciality Courses 1) Course 6 Neurosurgery	NES 314C	24		24
Speciality Clinical Work (123 CP)	NES 314C		123	123
TOTAL of second part		24	123	147

* Elective courses can be taken during either the 1st or 2nd parts.

Student work load calculation:

Work load hours are scheduled depending on the type of activities and targeted competences and skills in different courses

Elective Courses#:

- Advanced medical statistics.
- Evidence based medicine.
- Advanced infection control.
- Quality assurance of medical education.
- Quality assurance of clinical practice.
- -Hospital management

Two of the above mentioned courses are prerequisites for fulfillment of the degree.

3. Thesis / Researches:

40 CP are appointed to the completion and acceptance of the thesis.

**Another 40 points are appointed to acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

6. Courses Contents (Annex 1)

The competency based objectives for each course/module/rotation are specified in conjunction with teaching/training methods, requirements for achieving these objectives and assessment methods.

See Annex 1 for detailed specifications for each course/ module
Annex 6 II: Program Matrix

7-Admission requirements

- **Admission Requirements (prerequisites) if any :**
  - **I. General Requirements:**
    - **Master degree in the speciality.**
  - **II. Specific Requirements:**
    - **Fluent in English (study language)**

VACATIONS AND STUDY LEAVE

The current departmental policy to give working assistant lecture 3 week leave prior to first/ second part exams.

FEES:

As regulated by the postgraduate studies rules and approved by the faculty vice dean of post graduate studies and the faculty and university councils.

8-Progression and completion requirements

- Examinations of the first part (Medical statistic, Research methodology and Medicolegal Aspects and Ethics in Medical Practice and Scientific Research) could be set at 6 months from registering to the MD degree.
- Students are allowed to sit the exams of the remaining essential courses of the first part after 12 months from applying to the MD degree.
- Examination of the second part cannot be set before 4 years from registering to the degree.
- Discussion of the MD thesis could be set after 2 years from officially registering the MD subject, either before or after setting the second part exams.
- The minimum duration of the program is 4 years.

The students are offered the degree when:

1. Passing the exams of all basic science, elective and speciality courses of this program as regulated by the post graduates approved rules by the faculty council.
2. Completing all scheduled CP and log book (minimum 80%).
3. Discussion and acceptance of the MD thesis.
4. Acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

9-Program assessment methods and rules (Annex IV)

Method	ILOs measured
Written examinations: **Structured essay questions** **Objective questions** **MCQ** **Problem solving**	**K & I**
Clinical: **Long/short cases** **OSCE**	**K ,I, P &G skills**
Structured oral	**K ,I &G skills**
Logbook assessment	**All**
Research assignment	**I &G skills**

Weighting of assessments:

Courses		Degrees			
Courses	Course code	Written Exam	Oral and/or Practical Exam		Total
First part					
Basic science courses:					
Course 1: Medical Statistics	*FAC309A*	35	15	-	50
Course 2: Research methodology	*FAC309B*	35	15	-	50
Course 3: Medicolegal Aspects & Ethics in Medical Practice and Scientific Research	*FAC310C*	35	15	-	50
Course 4:Surgical neuroanatomy	*NES314A*	100	75		175
Course 5:Sugical Neuro-Pathology	*NES314B*	100	75		175
Total of first part					500
Second Part					
	Course code	written	Oral *	Clinical and Practical	total
NEUROSURGERY Paper 1 Paper2 Paper 3 (Commentary) Paper 4 (MCQ)	NES314C	 200 200 100 100	300	300	
Total of second part		600	300	300	1200
Elective course 1		50	50		100
Elective course 2		50	50		100

- * 25% of the oral exam for assessment of logbook

- **First part:**
  - Written exam 2 hours in Medical Statistics and Research Methodology + oral examination
- Written exam 1 hours in Medicolegal Aspects and Ethics in Medical Practice and Scientific Research + oral examination
- Written exam 2 hours in Surgical neuroanatomy

Written exam 2 hours in Surgical Neuro- Pathology

- **Second part:**
  - Written exam four papers 3 hours for each in Neurosurgery + Oral exam + Clinical /practical exam.
- **Elective courses**
  - Written exam one paper 1 hour in Elective course 1 + Oral & Practical exam
  - Written exam one paper 1 hour in Elective course 2 + Oral & Practical exam

10-Program evaluation

By whom	method	sample
Quality Assurance Unit	Reports Field visits	#
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits questionnaires	#
Senior students	questionnaires	#
Alumni	questionnaires	#

#Annex 5 contains evaluation templates and reports (Joined in the departmental folder).

11-Declaration

We certify that all of the information required to deliver this program is contained in the above specification and will be implemented.

All course specifications for this program are in place.

Contributor	Name	Signature	Date
Program Principle Coordinator	Prof. Roshdy El Khayat		**9/2021**
Head of the Responsible Department (Program Academic Director):	Prof. Mohamed Khallaf		**9/2021**

Annex 1, Specifications for Courses / Modules

Annex 1: specifications for courses

First Part

1) **Course 1: Medical statistics**
2) **Course 2: Research Methodology**
- **Course 3: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research**

Course 1: Medical statistics

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2022-2023

1. Course data

- **Course Title: Medical statistics**
- **Course code: FAC309A**
- **Specialty: offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course:** Pubic Health and Community Medicine
- **Coordinator (s):**
  - Course coordinator: Prof. Farag Mohammed Moftah
  - Assistant coordinator (s): Prof. Medhat Araby Khalil Saleh
- Date last reviewed: January -2022
- **Requirements (pre-requisites) if any:**
  - Completed Master degree in any of the academic or clinical departments of Medicine.

2. Course Aims

Enable gradute students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data

3. Intended learning outcomes (ILOs):To be able to use statistical principals to manage data

A knowledge and understanding

ILOS	Methods of teaching/ learning	Methods of Evaluation
A. List the types of variables	Lecture and discussion	Written examination
B. Identify the methods of data collection	Lecture and discussion	Written examination
C. Describe the different sampling strategies	Lecture and discussion	Written examination
D. Identify types of tabular and graphic presentation of data	Lecture and discussion	Written examination
E. Identify measures of central tendency and dispersion	Lecture and discussion	Written examination
F. Identify the characters of normal distribution curve.	Lecture and discussion	Written examination
G. Detect the difference between parametric and non-parametric tests	Lecture and discussion	Written examination
H. Identify the concepts of correlation and regression	Lecture and discussion	Written examination

B. intellectual

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe the normal curves.	Lecture& Discussions	Written examination
B. Describe and summarize data	Lecture& Discussions	Written examination
C. Select the proper test of significance	Lecture& Discussions	Written examination
D. Interpret the proper test of significance	Lecture& Discussions	Written examination
E. Describe the difference between parametric and non-parametric tests	Lecture& Discussions	Written examination

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design data entry files.	Tutorial on SPSS	Assignments SPSS exam
B. Validate data entry.	Tutorial on SPSS	Assignments SPSS exam
C. Manage data files.	Tutorial on SPSS	Assignments SPSS exam
D. Construct tables and graphs.	Tutorial on SPSS	Assignments SPSS exam
E. Calculate measures of central tendency and dispersion.	Tutorial on SPSS	Assignments SPSS exam
F. Select, apply and interpret the proper test of significance.	Tutorial on SPSS	Assignments SPSS exam

D general skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Appraise scientific evidence	Discussions	Research assignment
B. Use information technology to manage information, access on-line medical information; for the important topics.	tutorial	Research and audits' assignment

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skills C	General Skills D
Introduction	A-F	A-D	-	A&B
Tables and graphics	D	A-D	-	A&B
Sampling	C	-	-	A&B
Methodology of data collection	B	-	-	A&B
Type of variables	A	-	-	A&B
Proportion test& Chi-square test	E,F	C&D	-	A&B
Student T test& Paired T test	E,F	C&D	F	A&B
ANOVA test	E,F	C&D	F	A&B
Non parametric tests	E,F	C&D	F	A&B
Discrimination analysis factor analysis	E,F	C&D	-	A&B
SPSS Introduction	A-F	A-D	-	A&B
Data entry and cleaning of data	A	A-D	A-C	A&B
Transforming of variables	A	A&B	A-C	A&B
Descriptive statistics	D	A-D	D&E	A&B
Graphic presentation	D	A&B	D	A&B
Chi square and interpretation of results	E,F	C&D	F	A&B
Correlation Regression	E,F	C&D	F	A&B
Multiple and logistic Regression	E,F	C&D	F	A&B

5. Course Methods of teaching/learning

1. Lectures
2. Assignments
3. Discussions
4. Exercises
5. Tutorial on SPSS v.16

6. Course assessment methods:

i. Assessment tools:

1. Attendance and active participation
2. Assignment
3. Practical SPSS examination
4. Written exam

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

Department lecture notes

ii. Essential books

- Medical Statistics: Book by Ramakrishna HK 2016
- Janet Peacock and Philip Peacock. Oxford Handbook of Medical Statistics (second edition.) Publisher: Oxford University Press, Print Publication Date: Nov 2010 Print ISBN-13: 9780199551286, Published online: Jun 2011. DOI: 10.1093/med/9780199551286.001.0001
- Leslie E. Daly MSc, PhD, Hon MFPHM,, Geoffrey J. Bourke MA, MD, FRCPI, FFPHM, FFPHMI, Interpretation and Uses of Medical Statistics, Fifth Edition, First published:1 January 2000, Print ISBN:9780632047635 |Online ISBN:9780470696750 |DOI:10.1002/9780470696750
- Marcello Pagano, Kimberlee Gauvreau: Principles of Biostatistics second edition published in 2000 by Brooks/Cole and then Cengage Learning. CRC Press, Feb 19, 2018 - Mathematics - 584 pages.

Iii- Recommended books

- Ji-Qian Fang (Sun Yat-Sen University, China) Handbook of Medical Statistics: https://doi.org/10.1142/10259 | September 2017.Pages: 852
- Robert H. Riffenburgh: Statistics in Medicine 4th Edition (2020). EvidenceEvidence Based Medicine How to practice and teach EBM.
- Discovering Statistics Using IBM SPSS Book by Andy Field, 2013.

iii. Periodicals, Web sites, etc

iv. **Periodicals , etc** Statistics in Medicine - Wiley Online Library

v. **Web sites** https://www.phc.ox.ac.uk/research/medical-statistics

8. Signatures

Course Coordinator: - Farag Mohammed Moftah	**Head of the Department:** - Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022
Associated Coordinator: Prof. Medhat Araby Khalil Saleh	
Date: 10-1-2022	

Course 2: Research Methodology

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2021-2022

1. Course data

- **Course Title: Research methodology**
- **Course code: FAC309B**
- **Specialty: Offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Department of public health**
- **Coordinator (s):**
  - **Course coordinator:** Prof. Mahmoud Attia

  Assistant coordinator (s): Prof. Ekram Mohamed
  - Prof. Medhat Araby Khalil
- **Date last reviewed:** January 2022
- **Requirements (prerequisites) if any:**
  - **Completed Master degree in any of the academic or clinical departments of Medicine.**

2. Course Aims

To provide graduate students with the skills of:

- planning and implementing sound research
- writing a scientific research proposal

3. Intended learning outcomes (ILOs)

A knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain differences between different study designs.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
B. Identify sources and types of bias in research.	Lecture and discussion Practical sessions	Written exam Log book assignments Practical exam
C. Identify methods of data collection.	Lecture and discussion Practical sessions	Written exam Log book assignments
D. Select and design valid measurement tools for research.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
E. Explain ethical issues in conducting research on human subjects.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
F. List the steps involved in proposal writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
G. Identify a research problem within a conceptual framework.	Lecture Discussion	Written exam Log book assignments

		Practical exam
H. Use the web sources to do a literature search	Practical tutorial on web	Log book assignment
I. Describe the rules of authorship in scientific writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
J. Select the appropriate study design for the research question.	Lecture Practical sessions	Written exam Practical exam
K. Minimize bias in designing research.	Lecture	Written exam
L. Screening & theoretical background	Lectures	Written exam Practical exam
M. Mention the basic ethics for conducting a research and medicolegal principles relevant to data confidentiality.	lectures seminar	Written exam Practical exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Apply basic science & knowledge for appraising scientific literature.	Discussions &seminars	Written exam Practical exam
B- Design research and present study data, in seminars.	lecture seminar	log book assignments
C- Design suitable epidemiological study.	lecture seminar	log book assignments
D- Design strategies for resolving ethical concerns in research, law, and regulations.	lecture Workshops	Written exam log book assignments
E- Apply coherently synthesize ideas and integrate lateral and vertical thinking.	lecture Workshops	log book assignments
F- Evaluate screening tests and interpreting their uses in different population.	lecture	Written exam Practical exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Conduct epidemiological studies, screening and surveys.	lectures seminar	written exam log book assignments
B- Identify steps required in fielding the study.	Lecture	Assignments Written exam
C- Managing data collection team.	lectures seminar	log book assignments
D- Identify steps required for calculation sensitivity, specificity, positive predictive value, negative predictive value, accuracy of a screening test.	Lecture Practical sessions	Assignments Written exam Practical exam
E- Be able to define and apply the epidemiologic criteria of causality and be able to distinguish between a measure of association and evidence of causality.	Lecture Practical sessions	Assignments Written exam Practical exam
F- Synthesize information from multiple sources for research writing and the ability to perform paper critique .	Lecture Practical sessions	Assignments Written exam Practical exam
G- Identify bias and confounding in epidemiological study designs, their types and ways to control them in various types of biases.	Lecture Practical sessions	Assignments Written exam Practical exam

D General skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Scientific paper and proposal writing skills: be able to write an introduction, objectives and the methodological section.	Tutorial	Written examination
B- Learn authorship ethical rules.	Tutorial	Written examination
C- Perform practice-based improvement activities using a systematic methodology (audit, logbook, critical appraisal)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
D- Appraise evidence from scientific studies(journal club)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
E- Conduct epidemiological studies, screening and surveys.	- Lectures -Practical sessions - Discussion - Readings	attendance and participation
F- Facilitate training of junior students and other health care professionals in different screening activities.	Field work Participation in projects	attendance and participation

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
G- Maintain ethically sound relationship with community members.	- Lectures -Practical sessions - Discussion - Readings	Written exams
H- Provide information using effective nonverbal, explanatory, questioning, and writing skills.	- Lectures -Practical sessions - Discussion - Readings	Written exams Practical exams
I- Present results of researches in seminars.	- Lectures -Practical sessions - Discussion - Readings	Log book assignments

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity to the needs of society.	- Lectures - Discussion - Readings	Written exams
K- Manage potential conflicts of interest encountered by practitioners, researchers, and organizations.	- Lectures - Discussion - Readings	Written exams
L- Design strategies for resolving ethical concerns in research, law, and regulations.	Lectures - Discussion - Readings	Written exams Practical exams
M- Demonstrate ways to control for confounding in the analysis phase of a study	Lectures - Discussion - Readings	Written exams Practical exams
N- Demonstrate a commitment to ethical principles including confidentiality of participants' information and informed consent.	Lectures - Discussion - Readings	Written exams
O- Assess ethical considerations in developing communications and promotional initiatives.	- Lectures - Discussion - Readings	Written exams

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual B**	**Practical skills C**	**General Skills D**
Over view on research conduction and research ethics	A&E	A-D	A-C	C-G, I,L&M-O
How to write a research proposal	F,I	E	F	A-C&H
Observational study design	A& D	B & C	D	E & F
Experimental study design	A& D	B & C	B	E & F
Evaluation of diagnostic tests (Screening)	L	A	B& E	F
Systematic reviews and meta analysis	G, H & M	E& F	F	C, D
Confounding, bias & effect modification	B & K	D	E & G	M

5. Course Methods of teaching/learning:

1. Lectures
2. Assignments
3. Discussion
4. Exercises

6. Course assessment methods:

i. Assessment tools:

1. Attendance and participation
2. Log book assignments
3. Written examination
4. Practical examination

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

- Department lecture notes

ii. Essential books

- Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition by John W. CreswellSAGE Publications, Inc; 4th edition (January 1, 2014)
- Research methodology: A step – by – step Guide for Beginners. Ranjit Kumar, 2020. Second edition https://books.google.com.eg/books?
- Medical Research Essentials Rania Esteitie, McGraw Hill Professional, third edition, Feb 5, 2014 - Medical - 104 pages
- Research Methodology in the Medical and Biological Sciences Petter Laake, Haakon Breien Benestad, Bjorn R. Reino Olsen, 4th edition , Academic Press, Nov 5, 2007 - Science - 512 pages

iv. Recommended books

- Research Methods in Education 7th Edition, by Louis Cohen, Lawrence Manion, Keith Morrison Publisher: Routledge; (April 22, 2011) www.routledge.com/textbooks/cohen7e.
- Research Methodology: A Practical and Scientific Approach Vinayak Bairagi, Mousami V. Munot · 2019, Research Methodology: A Practical and Scientific Approach - Google Books
- Based Medicine How to practice and teach EBM. David Sachett, Sharon E. Straus, W. Scott Richardson , William Rosenberg R.Brain Haynes
- Dissertation workshop open courseware JHSPH

8. Signatures

Course Coordinator: Prof.Mahmoud Attia	**Head of the Department:** Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022

Course 3: Medico legal Aspects and Ethics in Medical Practice and Scientific Research

Name of department:
Forensic medicine and clinical toxicology
Faculty of medicine
Assiut University
2016-2017

1. Course data

- **Course Title: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research**
- **Course code: FAC310C**
- **Speciality:General and special surgery (1st part),**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Forensic Medicine and Clinical Toxicology**
- **Coordinator (s):**
- **Course coordinator:**
  Prof. Ghada omran
- **Date last reviewed:** September 2017
- **Requirements (prerequisites) if any :**
  - **Completed Master degree**

2. Course Aims

To describe the basic ethical and medicolegal principles and bylaws relevant to practice in the field of General and special surgery Rheumatology

3. Intended learning outcomes (ILOs):

A. knowledge and understanding

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Mention principals of writing consent forms.	Lecture and discussion	Written & oral exam
B. Mention principals of Writing a death certificate	Lecture and discussion	Written & oral exam
C. Explain principals of medical reports.	Lecture and discussion	Written & oral exam
D. Mention principals of Dealing with wounds.	Lecture and discussion	Written & oral exam
E. Mention principals of firearm injuries.	Lecture and discussion	Written & oral exam
F. List indications of induced emesis, gastric lavage and samples collection.	Lecture and discussion	Written & oral exam

B. Intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Design and present case , seminars in death certificate	Lecture and discussion	Written & oral exam
B. Design and present case, seminars in toxicological cases	Lecture and discussion	Written & oral exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Identify medical ethics and ethics in research.	Lecture and discussion	Discussion
B. Prepare and write consent.	Lecture and discussion	Discussion
C. Identify medical responsibilities.	Lecture and discussion	Discussion
D. Write death certificate.	Lecture and discussion	Discussion and active participation
E. Deal with a case of Suspicious death	Lecture and discussion	Discussion and active participation
F. Write medical reports	Lecture and discussion	Discussion and active participation
G. Identify types of wounds and deal with them.	Lecture and discussion	Discussion and active

		participation
H. Identify types, distance and direction of firearm wounds and deal with them	Lecture and discussion	Discussion and active participation
I. Elicit death associated with surgical anesthesia.	Lecture and discussion	Discussion and active participation
J. Perform gastric lavage, induce emesis, and obtain samples	Lecture and discussion	Discussion and active participation

D. General Skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Present a case.	Lecture and discussion	Global rating logbook
B. Write a consultation note	Lecture and discussion	Global rating logbook
C. Inform patients and maintaining comprehensive.	Lecture and discussion	Global rating logbook
D. Make timely and legible medical records	Lecture and discussion	Global rating logbook
E. Acquire the teamwork skills	Lecture and discussion	Global rating logbook

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skills C	General Skills D
1. Death and death certificate.	B	A	D	
2. Suspicious death	B		E	B
3. Death associated with surgical anesthesia	B		I	B
4. Medical reports	C	B	F	A,D,E
5. Toxicological Reports	F	B	J	A,E
6. Wounds	D		G	B
7. Firearm injuries	E		H	B
8. Ethics in research			A	
9. Medical ethics.	A		A,B,C	C,E

5. Course Methods of teaching/learning:

1. Lectures.
2. Discussions.
3. Exercises.

6. Course assessment methods:

i. Assessment tools:

1. Written examination.
2. Attendance and active participation.
3. Oral examination.

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35for written exam and 15 for oral exam).

7. List of references

i. Lectures notes

- Course notes.
- Staff members print out of lectures and/or CD copies.

ii. Essential books

- Bernard Knight and Pekka Saukko (2015: Knight Forensic Pathology. Hodder Arnold press
- Goldfrank, Lewis R.; Howland, Mary Ann; Hoffman, Robert S.; Nelson, Ewis S.; Lewin, Neal A (2019): Goldfrank's Toxicologic Emergencies, 11th ed. McGraw Hill / Medical.
- Medical Ethics Manual. World medical association. Third edition 2015.
- Medical ethics and law. Dominic Wilkinson, 3rdedition 2019.

iii. Recommended books

- Biswas Gautam (2021): Review of Forensic Medicine & Toxicology. 5th ed. Jaypee Brothers Medical Pub.

iv. Journal and web site

- Journals of all Egyptian Universities of Forensic Medicine and Clinical Toxicology.
- All International Journals of Forensic Medicine and Clinical Toxicology which available in the university network at www.sciencedirect.com. As :
  - Forensic Science International Journal.
  - Toxicology Letter.

v. others

8. Signatures

- Course Coordinator: **Prof.** Prof. Ghada omran	**- Head of the Department:** **Prof.** Randa Hussein Abdelhady
Date: September 2017	**Date:** September 2017

Course 4: Surgical Anatomy

1. Course data

- **Course Title:** Surgical Anatomy
- **Course code:** NES314A
- **Speciality:Neurosurgery**
- **Number of credit points: 3.5 credit points**
- **Department (s) delivering the course: Neurosurgery**
- **Coordinator (s):**
  - **Course coordinator: Prof. Ahmed Ibraheim**
  - **Assistant coordinator (s)** : Prof. Roshdy El-Khayat, Prof. Radwan Nouby, Prof. Mohamed Taghyan
- **Date last reviewed: 9– 2021.**
- **Requirements (prerequisites) if any :**
  - **Completed Master degree**

2. Course Aims

-The student should acquire the facts of Anatomy necessary for Neurosurgery.

3. Intended learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. DESCRIBE Anatomic details of : 1-skull and vertebral column 2- Head, neck scalp 3-Intracranial content Meninges and CSF Gross anatomy of brain Cerebral cortex Structure-of epencephalon, diencephalon, Basal ganglia, Gross anatomy of the ventricular system 4- blood supply of central nervous system 5-development and histogenesis of central nervous system 6-Autonomic nervous system 7-spinal cord -Gross anatomy - Tract of spinal cord 8- segmental innervations, plexuses and peripheral nerve	Didactic (lectures, seminars, tutorial) - journal club, -Critically appraised topic, -Training	Portfolios Procedure/case Log book -Oral exam -Written exam - operative oral exams

B. Mention the principles of anatomy of : - Abdominal wall -Peritoneum -Head and neck	Didactic (lectures, seminars, tutorial) - journal club, -Critically appraised topic, -Training	Portfolios Procedure/case Log book -Oral exam -Written exam - operative oral exams

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlate the fact of anatomy with clinical reasoning, diagnosis and management of common diseases related to neurosurgery.	Didactic (lectures, seminars, tutorial) - journal club, -Critically appraised topic, -Training	Portfolios Procedure/case Log book -Oral exam -Written exam - operative oral exams
B. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Neurosurgery	Didactic (lectures, seminars, tutorial) - journal club, -Critically appraised topic, -Training	Portfolios Procedure/case Log book -Oral exam -Written exam - operative oral exams

C-Practical skills

Practical = 0 hours

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; and support their own education	seminars Senior Staff Experience	Oral exam Logbook

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Write reports in common conditions mentioned in A .A and A.B	CLINICAL ROUNDS SEMINARS	Logbook Oral exam Chick list

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
C. Demonstrate a commitment to ethical principles		Logbook Oral exam

Systems-Based Practice

ILOs	Methods of teaching learning	Methods of Evaluation
D. Work effectively in different health care delivery settings and systems.	Senior Staff Experience	1. 360o global rating

4. Course contents (topic s/modules/rotation
Course Matrix

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
Anatomy of the skull	A	A&B	-	A-D
Anatomy of vertebral column.	A	A&B	-	A-D
Gross anatomy of the brain.	A	A&B	-	A-D
Microsurgical anatomy of the brain	A	A&B	-	A-D
Gross anatomy of the spinal cord.	A	A&B	-	A-D
Neuroanatomy :brain, brain stem, thalamus, hypothalamus, basal ganlia , tracts, spinal cord, peripheral nerves.	A	A&B	-	A-D
- abdominal wall	B	A&B	-	A-D
-peritoneum	B	A&B	-	A-D
-Head and neck	B	A&B	-	A-D

5. Course Methods of teaching/learning

1. Lectures

2-OR demonstration for microsurgical anatomy of the brain and spinal cord

3-Journal clubs

6. Course Methods of teaching/learning: for students with poor achievements

1 Lectures

2-Journal clubs

7. Course assessment methods:

i. Assessment tools: Written tests

Oral tests

Log book

ii. Time schedule: after 12 months from applying to the M D degree.

iii. Marks: 175

8. List of references

i. Lectures notes

Staff members print out of lectures and/or CD copies

ii. Essential books

Rhoton's Cranial Anatomy and Surgical Approaches

Rhoton's Atlas of Head, Neck and Brain

Gray's Clinical Neuroanatomy

Essential applied Anatomy of the PNS

iii. Recommended books

Richard Snell's Clinical Neuroanatomy

Netter's Atlas of Human Anatomy

Fitzgerald's Clinical Neuroanatomy and Neuroscience

iv-Periodicals, Web sites, … etc

Neurosurgery Journal

Journal of neurosurgery

9. Signatures

Course Coordinator: **Prof. Ahmed Ibraheim**	**Head of the Department:** Mohamed Khallaf
Date: 9/ 2021	**Date: 9/2021**

Course 5: Surgical Neuropathology

1. Course data

- **Course Title:** Surgical Neuropathology
- **Course code:** NES314B
- **Speciality:Neurosurgery**
- **Number of credit points: 3.5 credit points**
- **Department (s) delivering the course: Neurosurgery**
- **Coordinator (s):**
  - **Course coordinator: Prof. Roshdy Al-Khayat**
  - **Assistant coordinator (s)** : Prof. Ahmed Ibraheim, Prof. Radwan Nouby, Prof. Mohammad Taghyan
- **Date last reviewed: 9– 2021.**
- **Requirements (prerequisites) if any :**
  - **Completed Master degree**

2. Course aims

-The student should acquire the pathological facts necessary for *Neurosurgery*

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Demonstrate pathologic details **of :** 1- <u>General topics of:</u> inflammation, degeneration, tumors, trauma, repair embolism, infarction, thrombosis 2-<u>Gross ,histological and pathological feature of:</u> a- CNS congenital anomalies b- intracranial infection c- vascular lesion d- traumatic lesion e- CNS neoplasm f- peripheral nerve disorder: trauma, inflammation, tumors 3- Neuropathology of skull 4-Spine: disc, trauma, tumors	Lectures Training Seminars	Written and oral examination
B-Mention the principles of pathology of: -Peritoneum -Peripheral vascular disorders	Lectures Training Seminars	Written and oral examination

A- Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Correlates the facts of pathology with clinical reasoning, diagnosis and management of common diseases related to Neurosurgery	Didactic (lectures, seminars, tutorial)	-Written and oral examination -Log book
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to common clinical situations related to Neurosurgery.		

C Practical skills

Practical = 0 hours

D-General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Use information technology to manage information, access on-line medical information; and support their own education	seminars Senior Staff Experience	Oral exam Logbook

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Write reports in common conditions mentioned in A .A and A.B	CLINICAL ROUNDS SEMINARS	Logbook Oral exam Chick list

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
C. Demonstrate a commitment to ethical principles		Logbook Oral exam

Systems-Based Practice

ILOs	Methods of teaching learning	Methods of Evaluation
D. Work effectively in different health care delivery settings and systems.	Senior Staff Experience	1. 360o global rating

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: One year after applying to MD

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
1- General topics of: inflammation, degeneration, tumors, trauma, repair embolism, infarction, thrombosis	**A**	A&B	-	A-D
2-Gross ,histological and pathological feature of: a- CNS congenital anomalies b- intracranial infection c- vascular lesion d- traumatic lesion e- CNS neoplasm	**A**	A& B	-	A-D
f- peripheral nerve disorder: trauma, inflammation, tumors				
3- Neuropathology of skull	**A**	A& B		A-D
4-Spine: disc, trauma, tumors	**A**	A& B		
Peritoneum	B	A& B		A-D
-Peripheral vascular disorders	B	A& B		A-D
1- General topics of: inflammation, degeneration, tumors, trauma, repair embolism, infarction, thrombosis	**A**	A&B	-	A-D

5. Course Methods of teaching/learning

1. Lectures
2-Journal clubs
3-scientific meetings with pathology department

6. Course Methods of teaching/learning: for students with poor achievements

2 Lectures
3-Journal clubs

7. Course assessment methods:

i. Assessment tools: Written tests
Oral tests
Log book

ii. Time schedule: after 12months from applying to the M D degree.

iii. Marks: 175

8. List of references

i. Lectures notes

Staff members print out of lectures and/or CD copies

ii. Essential books

Youman's Neurological Surgery. Greenberg's Handbook of Neurosugery Neuropathology Review – Richard Prayson

iii. Recommended books

Principles of Neurosurgery

Samii's Essentials in Neurosurgery

iv-Periodicals, Web sites, … etc

Neurosurgery Journal

Journal of neurosurgery

9. Signatures

Course Coordinator: Prof. Roshdy El- Khayat	**Head of the Department:** Prof. Mohamed Khallaf
Date: 9/ 2021	Date: 9/ 2021

Course 6 NEUROSURGERY

Name of department: Neurosurgery

Faculty of medicine

Assiut University

2021-2022

1. Course data

- **Course Title: Neurosurgery**
- **Course code: NES 314 C**
- **Speciality :Neurosurgery**
- **Didactic 24 , (16.3%) practical** 123 **(83 .7%).total 147**
- **Department (s) delivering the course: Neurosurgery**
- **Coordinator (s):**
  - **Course coordinator: Prof. Roshdy EL Khayat**
  - **Assistant coordinator (s):** Prof. Mohammad. Taghyan, Prof. Wael M. Ali
- **Date last reviewed: 9/ 2021**
- **Requirements (prerequisites) if any :**
  - **As in the general program**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

1. Graduate a candidate who is able to demonstrate Knowledge and understanding of basics, methodology, tools and ethics of scientific medical, clinical research in the field of Neurosurgery.
2. Graduate a candidate who is able to independently manage different simple and complicated neurosurgical cases.
3. Demonstrate an understanding of the anatomy, physiology, pathophysiology, and presentation of traumatic injuries of the brain, spinal cord, and peripheral nervous system, including their supporting structures.
4. Demonstrate the ability to formulate and implement appropriate diagnostic and treatment plans for traumatic injuries to the nervous system
5. Describe the typical presentation and treatment of common neurosurgical infections.
6. Review the methods used to minimize infectious complications in neurosurgical patients.
7. Demonstrate the ability to formulate and implement a diagnostic and treatment plan for developmental diseases in children.
8. Demonstrate an understanding of the anatomy, physiology, pathophysiology, and presentation of tumor-related diseases of the cranium.
9. Formulate and implement a diagnostic and treatment plan for tumor-related diseases of the cranium that are amenable to surgical intervention.
10. Demonstrate the ability to formulate and implement a diagnostic and treatment plan for diseases of the spine, its connecting ligaments, the spinal cord, the cauda equina, and the spinal roots that are amenable to surgical intervention.

11. Formulate and implement a diagnostic and treatment plan for cerebrovascular diseases, including medical and surgical management.
12. Define neurosurgical stereotactic procedures and recognize their proper application.
13. Formulate and execute diagnostic and therapeutic plans for management of pain and disorders giving rise to pain.
14. formulate and implement a diagnostic and treatment plan for diseases of the peripheral nerves that are amenable to surgical intervention.

NEUROSURGERY COURSE: (8 modules)

(1) Neurotrauma
(2) CNS infections
(3) Developmental anomalies of CNS
(4) CNS Neoplasms
(5) Spine
(6) Vascular Neurosurgery
(7) Functional Neurosurgery
(8) Peripheral nerves

3. Course intended learning outcomes (ILOs):

Unit 1: Neurotrauma

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: • Polytrauma patient • Polytrauma patients with severe neurological and systemic trauma • Subarachnoid hemorrhage, both traumatic and spontaneous • Birth-related intracranial Injuries. • Spinal cord Injury and Spinal Fractures • Brachial plexus injury and peripheral nerve injuries • Intracranial hypertension • Stroke • Electrical injuries to the nervous system • Primary and Secondary Head Injury • Traumatic Intracranial and Extracranial hemorrhage • Skull Fractures and Fracture Base. • Cerebrovascular injuries • Brain edema and cerebral swelling	Seminars, tutorial) - Journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation

• Craniofacial fractures • Coagulopathy after head injury. • Post traumatic outcome and complications • CSF leak		
B. Mention the principles of • ICU management of patients with spinal cord injury. • Management of peripheral nerve injuries. • Rehabilitation of different types of neurosurgical patients • Resuscitation of polytrauma patients including appropriate fluid resuscitation, and explain the anticipated effects of shock and resuscitation on fluid shifts and on electrolyte balance. • Intravenous fluids for a newly admitted Intensive Care Unit (ICU) • Appropriate initial ventilator settings for patients with different types of common neurosurgical conditions • Indications, advantages, and risks for various hemodynamic monitoring tools (e.g., pulmonary artery catheters, indwelling arterial lines) used in critically ill patients. • Nutritional management in neurosurgical critical care. • Rehabilitation • ICP and its monitoring	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.
C. Mention Basics of the following rare diseases and conditions - Child abuse - Brain death - neurotoxicology	Regular department meeting. Journal club	Oral and written exams.

D. Explain the facts and principles of the relevant basic supportive sciences related to Neurotrauma	Seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
E. Explain the facts and principles of the relevant clinically supportive sciences related to Neurotrauma	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation

	that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	
F. Describe the basic ethical and medicolegal principles relevant to the Neurotrauma	Lectures seminars	Oral and written exams
G. Describe the basics and measurement of quality assurance to ensure good clinical care in this field	Outpatient clinic Clinical rounds	Oral and written exams
H. Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I. Explain the impact of common health problems in the field of Neurotrauma on the society.	Seminars	Oral exam
J. Formulate management plans and alternative decisions in different situations in the field of Neurotrauma		

B-Intellectual outcomes for all units

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design and present cases in common problems related to Neurosurgery	Clinical rounds Outpatient clinics	Portfolios Procedure/case presentation Log book Written ,Oral and clinical tests
B. Apply the basic and clinically supportive sciences, which are appropriate to Neurosurgery related conditions.	Clinical rounds Outpatient clinics	Portfolios Procedure/case presentation Log book
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Neurosurgery	Clinical rounds Outpatient clinics Weekly department scientific meetings.	Written ,Oral and clinical tests Log book
D. Plan research projects.	department scientific meetings Journal clubs	Oral exams
E. Write scientific papers.	department scientific meetings Journal clubs	Oral exams Thesis discussion
F. Lead risk management activities as a part of clinical governs.		

G. Plain quality improvement activities in the field of medical education and clinical practice in Neurosurgery	Outpatient clinics Seminars Clinical rounds	Oral exams
H. Create / innovate plans, systems, and other issues for improvement of performance in his practice.	Seminars Clinical rounds	Oral exams Log book
I. Present and defend his / her data in front of a panel of experts	MD thesis seminars	Evaluated during MD thesis discussion.

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Neuro-trauma	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures - Various lab blood tests - Plain x ray skull - CT and CTA brain - MRI and MRA brain - Vessels angiography	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures - Various lab blood tests	Outpatient clinics Clinical round	Oral exams

- Plain x ray skull - CT and CTA brain - MRI and MRA brain - Vessels angiography		
D. Perform the following non invasive/invasive diagnostic procedures - Intracranial pressure monitoring devices, including ventriculostomy catheters	Clinical rounds Operative room education	Oral and clinical exams Log book
E. Prescribe the following non-invasive and invasive therapeutic procedures. • Perform twist-drill or burr-hole drainage of subdural fluid collections. • Assist with opening and closure of craniotomies.	Outpatient clinics Clinical rounds	Oral and clinical exams
F. Perform the following non invasive and invasive therapeutic procedures • Craniotomy for: subdural and/or epidural hematoma, penetrating head injury, intracerebral hematoma or contusion, depressed skull fracture, decompressive craniectomy • Repair/cranialization of frontal sinus fracture • Craniotomy/craniectomy for posterior fossa epidural, subdural, or intracerebral hematoma • Simple cranioplasty • Manage traumatic skull base	Clinical rounds Operative room education	Oral and clinical exams LOG BOOK

fractures with CSF leak. • Manage infections associated with open CNS injuries. • Reconstruct complex cranial defects, with assistance from other specialties as indicated. • Explore and repair peripheral nerve injuries		
G. Develop and carry out patient management plans for the following problems: As mentioned A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
H. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation

I. Use information technology to support patient care decisions and patient education for Neurotrauma related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J. Provide health care services aimed at preventing the conditions mentioned in A-A	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	seminars, tutorial) - journal club, -Critically appraised topic, Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
L-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills for all units (1-8)
Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology in the common problems (plain and conduct audit cycles)	Simulations Clinical round Seminars Lectures Case presentation Hand on workshops	Global rating Portfolios Procedure/case presentation Log book Chick list
B. Locate, appraises, and assimilates evidence from scientific studies related to patients' health problems.	Seminars Clinical rounds Journal club	Log book Clinical and oral exams
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness	MD thesis	Examined during MD thesis discussion
D. Use information technology to manage information, access on-line medical information; and support their own education	Seminars MD thesis	MD thesis discussion
E. Lead the learning of students and other health care professionals.	Clinical rounds Outpatient clinic	Clinical exams

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	Simulations Clinical round Seminars Lectures Case presentation Hand on workshops	Global rating Portfolios Procedure/case presentation Log book Chick list
G. Perform the following oral communications: -Interpretation of results of different investigations related to the conditioned mentioned in A-A and discussion of different therapeutic option	Clinical rounds Outpatient clinic seminars	Log book Clinical exams
H. Fill the following reports: -Post operative -Radiological report	seminars	Clinical and oral exams
I. Work effectively with others as a member or leader of a health care team e.g. Trauma operative theater	Training in the ER unit	Clinical and oral exam Log book

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Case log Observation and supervision Written & oral communications	1. Objective structured clinical examination 2. Patient survey
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.	Clinical rounds	1. 360o global rating
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities	Outpatient clinic Clinical rounds	

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.	Observation Senior staff experience	1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care	seminars	1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities	seminars	1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance	seminars	

Unit 2 CNS infections

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: • Meningitis • Common CNS infections • Common opportunistic CNS infections • Non-CNS infections, which may commonly arise in neurosurgical patients such as: respiratory infections, urinary tract infections and wound infections. • Postoperative fever and sepsis • Shunt infections. • Brain abscess • Spinal Infections • Empyema • Osteomyelitis	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation
B. Mention the principles of • Radiological evaluation of patients with suspected and known CNS infections. • Indications for alerting individuals at risk for infections based on exposure to a patient with a known CNS infectious process. • Antimicrobial drugs. • workup for a febrile patient	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

C. Mention Basics of the following rare diseases and conditions - Encephalitis - AIDS - Cretuzfeldt-Jakob disease (CJD) - Lyme disease	Regular department meeting. Journal club	Oral and written exams.
D. Explain the facts and principles of the relevant basic supportive sciences related to CNS Infection	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
E. Explain the facts and principles of the relevant clinically supportive sciences related to CNS infection.	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global

	clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	rating -Simulation
F. Describe the basic ethical and medicolegal principles relevant to the CNS infection.	Lectures seminars	Oral and written exams
G. Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H. Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I. Explain the impact of common health problems in the field of CNS infection. on the society.	Seminars	Oral exam
J. Formulate management plans and alternative decisions in different situations in the field of CNS infection.		

B- Intellectual outcome as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to CNS Infection	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures - Various lab blood tests - CT brain - CSF sample – lab tests - MRI and MRA brain	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures - Various lab blood tests - CT brain - CSF sample – lab tests - MRI and MRA brain	Outpatient clinics Clinical round	Oral exams
D. Perform the following non invasive/invasive diagnostic procedures - intracranial pressure monitoring devices, including ventriculostomy catheters - Lumbar puncture and CSF sampling - Shunt tapping	Clinical rounds Operative room education	Oral and clinical exams Log book

E. Prescribe the following non-invasive and invasive therapeutic procedures. • Use universal precautions. • Demonstrate the ability to use sterile technique.	Outpatient clinics Clinical rounds	Oral and clinical exams
F. Perform the following non invasive and invasive therapeutic procedures • Operatively treat supra- and infratentorial brain abscess, SD Empyema, and Spinal infections.	Clinical rounds Operative room education	Oral and clinical exams LOG BOOK
G. Develop and carry out patient management plans for: • Non-CNS infections in neurosurgical patients. • CNS infections in neurosurgical patients.	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
H. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation

I. Use information technology to support patient care decisions and patient education for CNS related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J. Provide health care services aimed at preventing: the conditions mentioned in A-A.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care.	seminars, tutorial) - journal club, -Critically appraised topic, Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
L-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

General skills as in unit 1

Unit 3 Developmental anomalies of CNS

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: • Spinal dysrphism • Chiari Malformations, and syringomyelia • Split Cord Anomalies, • Phakomatosis (Neurocutaneous syndromes) • Craniofacial Syndromes, • Hydrocephalus and other disorders of CSF circulations • Patient with suspected shunt malfunction. • Cerebral atrophy. • Craniosynostosis. • Arachnoid cysts • Tethered cord syndrome • Encephalocele • Dandy walker malformations • Cerebrovascular anomalies	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation
B. Mention the principles of: ▪ The embryology of the central nervous system (CNS) and its supporting structures. ▪ Describe the normal physiology of	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

CSF ▪ Inheritance patterns of Developmental anomalies of CNS ▪ molecular basis of Developmental anomalies of CNS ▪ Different etiologies of hydrocephalus and their relative incidence. ▪ Low-pressure and high-pressure hydrocephalus		
C. Mention Basics of the following rare diseases and conditions - Corpus callosum agensesis - Klippel-feil syndrome - Intracranial lipomas - Hypothalamic hamartomas - Congenital Intracranial and spinal cysts - Craniocervical junction anomalies	Regular department meeting. Journal club	Oral and written exams.
D. Explain the facts and principles of the relevant basic supportive sciences related to Developmental anomalies of CNS	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
E. Explain the facts and principles of	seminars, tutorial)	Portfolios

the relevant clinically supportive sciences related to Developmental anomalies of CNS	- journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F-Describe the basic ethical and medicolegal principles relevant to Developmental anomalies of CNS	Lectures seminars	Oral and written exams
G. Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H. Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I. Explain the impact of common health problems in the field of Developmental anomalies of CNS on the society.	Seminars	Oral exam
J. Formulate management plans and alternative decisions in different situations in the field of Developmental anomalies of CNS		

B- Intellectual outcome as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to developmental anomalies	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures - Various lab blood tests - Plain x ray skull - CT and CTA brain - MRI and MRA brain - Vessels angiography	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures -The results of the physical examination, laboratory and radiological studies	Outpatient clinics Clinical round	Oral exams
D. Perform the following non invasive/invasive diagnostic procedures ○ Perform a shunt tap. ○ Perform a twist drill or burr hole for subdural, parenchymal, or ventricular access or as part of a craniotomy.	Clinical rounds Operative room education	Oral and clinical exams Log book
E. Prescribe the following non invasive and invasive therapeutic	Outpatient clinics	Oral and clinical exams

procedures. • Perform twist-drill or burr-hole drainage of subdural fluid collections. • Assist with opening and closure of craniotomies.	Clinical rounds	
F. Perform the following non invasive and invasive therapeutic procedures ○ Perform subdural, intraventricular and lumbar punctures in children. ○ Perform a shunt tap. ○ Perform a twist drill or burr hole for subdural, parenchymal, or ventricular access or as part of a craniotomy. ○ Place a ventriculoperitoneal, or jugular shunt. ○ Revise a ventriculoperitoneal, or jugular shunt. ○ Perform a cranioplasty with artificial material or homologous material. ○ Close an open spinal or cranial neural tube defect. ○ Repair an intracranial encephalocele. ○ Accomplish endoscopic third ventriculostomy in uncomplicated settings. ○ Apply and utilize frameless or framed stereotactic modalities for lesion location and shunt placement. ○ Accomplish repair of a Chiari malformation. ○ Assist with complex craniofacial surgery.	Clinical rounds Operative room education	Oral and clinical exams LOG BOOK
G. Develop and carry out patient management plans for the following problems: As mentioned A-A	seminars, tutorial) - journal club, -Critically appraised topic,	Portfolios Procedure/case Log book -Oral exam

	-Educational prescription -Present a case (true or simulated) in a grand round -Others	-Written exam -record review -Global rating -Simulation
H. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
I. Use information technology to support patient care decisions and patient education for developmental anomalies related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J. Provide health care services aimed at preventing the conditions mentioned in A-A	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -	Portfolios Procedure/case Log book -Oral exam -Written exam -record review

	Present a case (true or simulated) in a grand round -Others	-Global rating -Simulation
K. Work with health care professionals, including those from other disciplines, to provide patient-focused care .	seminars, tutorial) - journal club, -Critically appraised topic, Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
L-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

Unit 4: CNS Neoplasm

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: • Bone tumors involving the calvarium. • Astrocytomas, including the accepted World Health Organization (WHO) grading scheme • Gliomas other than astrocytomas • Metastatic tumors, including location and common origins • Infectious, granulomatous, and cystic lesions that may present in a tumor-like manner • Meningioma • Arachnoid cysts • Cystic lesions of the brain, including tumoral and infectious. • Posterior fossa neoplasms, including cerebellar astrocytoma, medulloblastoma, and ependymoma. • Various tumors that may arise in the cerebellopontine angle (CPA) • Pituitary tumors • Germ cell tumors • Fibrous dysplasia	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation

• Skull base tumors • Craniopharyngioma • Lymphomas • Craniocervical junction tumors. • Intraventricular tumors. • Orbital tumors, • Pseudotumor cerebri (intracranial hypertension) • Spinal and Spinal cord tumors		
B. Mention the principles of • Tumor biology including genetic factors and biochemical processes associated with invasion • Use of lumbar spinal drainage in skull base surgery, its implementation, and complications • Principles of stereotaxis and the underlying localization techniques • General methods employed for embolization of tumors of the head and neck, • Review the role of radiotherapy, chemotherapy, and other adjunctive treatments of CNS neoplasms. • The role of ventricular drainage, and surveillance imaging • Radiotherapy and chemotherapy (systemic and local). • Minimal invasive techniques in CNS neoplasms. • Intraoperative neuromonitoring. • Awake craniotomies	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

C. Mention Basics of the following rare diseases and conditions - Empty sella - Tumor markers - Carcinomatous meningitis - Brain stem tumors	Regular department meeting. Journal club	Oral and written exams.
D. Explain the facts and principles of the relevant basic supportive sciences related to CNS tumors	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
E. Explain the facts and principles of the relevant clinically supportive sciences related to CNS tumor	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation

	venues) -Present a case (true or simulated) in a grand round -Others	
F. Describe the basic ethical and medicolegal principles relevant to the CNS tumor	Lectures seminars	Oral and written exams
G. Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H. Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I. Explain the impact of common health problems in the field of CNS tumor on the society.	Seminars	Oral exam
J. Formulate management plans and alternative decisions in different situations in the field of the CNS tumor		

B-Intellectual outcomes as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to CNS neoplasm	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures - Various lab blood tests - Plain x ray skull - CT and CTA brain - MRI and MRA brain - Vessels angiography - Bone scan	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures - Appropriate radiographic studies and formulate a differential diagnosis for patients with intracranial neoplasms.	Outpatient clinics Clinical round	Oral exams
D. Perform the following non invasive/invasive diagnostic and therapeutic procedures • Prepare patients for cranial tumor surgery. • Place lumbar drains. • open and close scalp incisions. • Perform ventriculostomies. • Proper postoperative wound care. • Position patients for craniotomy and craniectomy. • Perform the opening and closing of craniotomies and craniectomies. • Assist in the resection of intracranial neoplasms. • Resect skull lesions	Clinical rounds Operative room education	Oral and clinical exams Log book

• Assess the need for appropriate pre-, intra-, and postoperative monitoring. • Perform resection of supra- and infratentorial intra-axial and extra-axial neoplasms. • Perform resection of pituitary lesions. • Perform or serve as first assistant for skull base procedures. • Operate different machines required to perform CNS neoplasms surgeries (Microscope, CUSA, Endoscope, Craniotome, Neuronavigation, Intraoperative imaging modalities, intraoperative neuro monitoring modalities)		
E. Develop and carry out patient management plans for the following problems: As mentioned A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
G. Use information technology to support patient care decisions and patient education for CNS neoplasm related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -	Portfolios Procedure/case Log book -Oral exam -Written exam -record review

	Present a case (true or simulated) in a grand round -Others	-Global rating -Simulation
H. Provide health care services aimed at preventing the conditions mentioned in A-A	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
I. Work with health care professionals, including those from other disciplines, to provide patient-focused care. ○ Obtain proper non neurosurgical consultation in tumor patients	seminars, tutorial) - journal club, -Critically appraised topic, Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills as in unit 1

Unit 5: Spine

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: ○ Common syndromes of degenerative spinal disorders: radiculopathy, myelopathy, instability, and neurogenic claudication. ○ Common syndromes of spinal cord injury, including complete transverse injury, anterior cord injury, Brown-Sequard injury, central cord injury, cruciate paralysis, syringomyelia, conus syndrome, and sacral sparing. ○ Cauda equina syndrome. ○ Cervical, thoracic, and lumbar pain. ○ Fractures, dislocations, and ligament injuries of the craniocervical region, subaxial cervical spine, thoracic, thoracolumbar junction, lumbar, and sacral spine ○ Spinal cord injury and myelopathy ○ Primary spinal tumors, spinal cord tumors, and spinal metastatic disease ○ Gunshot and other penetrating wounds to the spine. ○ Adult tethered cord syndrome and syringomyelia. ○ Spontaneous and postoperative spinal infections. ○ Intraoperative and postoperative cerebrospinal fluid leaks.	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation

○ intradural congenital, neoplastic, and vascular lesions. ○ indications for the use of angiography and endovascular procedures in the management of spinal disorders. ○ Rheumatoid arthritis. ○ Paget disease ○ Osteoporosis ○ Intervertebral disc herniation (lumbar, cervical,thoracic) ○ Spinal stenosis ○ Craniocervical abnormalities.		
B-Mention the principles of ○ Cervical, thoracic, and lumbar pain. ○ Non-surgical spinal cord syndromes including amyotrophic lateral sclerosis, demyelinating conditions, and combined systems disease. ○ Management of spine and spinal cord injured patients including immobilization, traction, reduction, appropriate radiographic studies, and medical management. ○ Biomechanics of the craniocervical junction, cervical spine, and thoracolumbar and lumbar spine. ○ The biomechanics of common internal spinal fixators. ○ Spinal instability. ○ The radiographic signs of degenerative neoplastic, traumatic, and congenital spinal instability. ○ indications for, and uses, and relative effectiveness of common spinal orthoses ○ Intraoperative spinal cord monitoring and technical aspects of intraoperative spinal cord	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

monitoring. ○ Indications for anterior and posterior approaches to the spine for the treatment of herniated cervical discs, spondylosis, and instability. ○ The biology of bone healing and options for bone grafting in spinal surgery ○ Spinal Fusion ○ Spinal deformities		
C-Mention Basics of the following rare diseases and conditions - Diffuse idiopathic skeletal hyperosteosis - Spinal vascular malformations. - Ossification of longitudinal ligaments. - coccydynia	Regular department meeting. Journal club	Oral and written exams.
D-Explain the facts and principles of the relevant basic supportive sciences related to Spine	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation

E-Explain the facts and principles of the relevant clinically supportive sciences related to Spine	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F-Describe the basic ethical and medicolegal principles relevant to spine	Lectures seminars	Oral and written exams
G-Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H-Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I- Explain the impact of common health problems in the field of Spine	Seminars	Oral exam
J-Formulate management plans and alternative decisions in different situations in the field of Spine		

B-Intellectual outcomes as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Spine	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures ○ X-rays, dynamic x-rays, myelograms, CT scans and MR scans of patients with spinal disorders.	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures ○ Interpret plain x-rays, dynamic x-rays, myelograms, CT scans and MR scans of patients with spinal disorders.	Outpatient clinics Clinical round	Oral exams
D. Perform the following non invasive/invasive diagnostic and therapeutic procedures • Preparation of patients for spinal surgery, including proper positioning, protection to pressure points, and placement of indicated arterial and central venous catheters, indwelling urinary catheters and anti-embolism devices. • Lumbar punctures and placement of lumbar drains. • Place and manage cranial traction devices for reduction and immobilization of the unstable cervical spine. • Place and manage a halo vest, including indications for placement and criteria for removal.	Clinical rounds Operative room education	Oral and clinical exams Log book

• Properly place the Mayfield head holder and other headrests. • Harvest autologous bone graft from the calvarium, rib, fibula, and anterior or posterior iliac crest. • Dorsal exposure of the spinous processes, laminae, and facets of the cervical, thoracic, and lumbar spine. • Close dorsal, ventral, and lateral spinal incisions. • Proper postoperative wound care. • Postoperative management of patients who have undergone spinal procedures. • Use of the operating microscope. • Prepare structural allografts for use in spinal surgery. • Postoperative inpatient or outpatient rehabilitation in patients with spinal disorders. • Ventral exposure of the cervical spine followed by anterior cervical discectomy. • An anterior cervical interbody arthrodesis. • Surgical technique in the management of lumbar and recurrent lumbar disc herniations and lumbar canal stenosis. • Posterior lumbar arthrodesis with or without the use of interbody instrumentation. • Cervical lateral masses, thoracic and lumbar transverse processes, and the sacral ala. • Posterior/intertransverse arthrodesis in the cervical, thoracic and lumbar regions. • Laminectomy with or without transpedicular decompression for tumor, infection, or trauma. • Manage postoperative complications of spinal surgery .		

• Tethered cord release. • Function independently in all phases of management of patients with spinal disorders. • Occipital-cervical arthrodesis. • Common techniques for performing C1-2 arthrodesis. • Anterior cervical corpectomy followed by arthrodesis. • Transthoracic, thoracoabdominal, retroperitoneal, and transabdominal approaches to the thoracic and lumbar spine with assistance if necessary . • Costotransversectomy and lateral extracavitary approaches to the thoracolumbar spine. • Excise a herniated thoracic disc • Vertebral corpectomy of the thoracolumbar spine for tumor, infection, or trauma, • Perform anterior arthrodesis of the thoracolumbar spine. • Proper placement of transpedicular screws in the thoracic and lumbar spine. • Perform methylmethacrylate vertebroplasty. • Open reduction of fractures and dislocations of the cervical, thoracic, and lumbar spine. • Surgically manage arachnoid cysts and spinal cord syrinx. • intradural procedures for congenital, neoplastic, and vascular lesions. • Assist in minimal invasive spinal approaches		
E. Develop and carry out patient management plans for the following problems: As mentioned A-A	seminars, tutorial) - journal club, -Critically	Portfolios Procedure/case Log book -Oral exam

	appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	-Written exam -record review -Global rating -Simulation
F. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
G. Use information technology to support patient care decisions and patient education for Spine related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
H. Provide health care services aimed at preventing the conditions mentioned in A-A	seminars, tutorial) -journal club,	Portfolios Procedure/case Log book

	-Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	-Oral exam -Written exam -record review -Global rating -Simulation
I. Work with health care professionals, including those from other disciplines, to provide patient-focused care .	seminars, tutorial) - journal club, -Critically appraised topic, Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills as in unit 1

Unit 6 Vascular Neurosurgery
A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: ○ Classic syndromes of different vessel occlusion of the intracranial vasculatures. ○ The classic brain stem ischemic syndromes. ○ Common causes of brain ischemic states. ○ Intracranial and intraspinal hemorrhage. ○ Intracranial hemorrhage, subarachnoid hemorrhage, and ischemic stroke. ○ Ischemic and hemorrhagic stroke. ○ Intracranial aneurysms ○ Vascular malformations (cranial and spinal) ○ Occlusive cerebrovascular diseases ○ Vasospasm	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation
B-Mention the principles of: - Anatomy of the extracranial and intracranial vessels, including the carotid, vertebral, and spinal arteries -Anatomy of the venous circulation as it pertains to the central nervous system. -The concepts of cerebral blood flow, cerebral autoregulation (hemodynamic and metabolic), ischemic thresholds, intracranial pressure, and cerebral	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

perfusion pressure. - The impact of intracranial hypertension with and without mass lesion on cerebral blood flow. -Computed tomography (CT) and magnetic resonance (MR) evidence of ischemic injury -The epidemiology, physiology, and underlying pathophysiology of ischemic brain injury, including concepts of critical therapeutic window. - Principles of fluid and electrolyte resuscitation and maintenance, respiratory physiology, cardiac physiology, and nutritional physiology - The principles of augmentation of cerebral blood flow during cerebral vasospasm. -The principles and indications for medical, endovascular, and surgical interventions for ischemic and hemorrhagic stroke. -The fundamentals of CT scanning, including the typical appearance of acute, subacute, and chronic blood, calcification, ventricular anatomy, and mass effect. -The typical CT appearance of hemorrhagic and ischemic stroke. Detailed explanation for the typical delay between the onset of stroke and appearance of confirmatory CT findings. -The fundamentals of MR imaging. Normal and abnormal findings within the realm of cerebrovascular disease. -The indications for non-invasive vascular imaging, including ultrasound, magnetic resonance angiography (MRA), and CT angiography. - Practical application of commonly employed non-invasive studies, such as		

transcranial Doppler, in the setting of cerebral vasospasm. -The indications for catheter angiography. Interpret the findings of angiography in ischemic and hemorrhagic cerebrovascular conditions. -The key segments of the internal carotid artery including the upper cervical, petrous, cavernous, and supraclinoid components. -localizing focal intracranial and spinal vascular pathology by the use of traditional topographic measurements and the application of stereotactic guidance. -Describe the surgical anatomy and the principles of exposure of the cervical carotid artery. -Explain the principles of ischemic neuronal protection and salvage. - Systemic complications of cerebrovascular illness, including deep venous thrombosis, pulmonary embolism, bacterial pneumonia, aspiration, congestive heart failure, etc. - Intraoperative Cerebral protection - Endovascular management of cerebrovascular diseases		
C-Mention Basics of the following rare diseases and conditions - Bypass surgeries - Moya moya disease	Regular department meeting. Journal club	Oral and written exams.
D-Explain the facts and principles of the relevant basic supportive sciences related to Vascular Neurosurgery	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues)	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation

	-Present a case (true or simulated) in a grand round -Others	
E-Explain the facts and principles of the relevant clinically supportive sciences related to Vascular Neurosurgery	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F-Describe the basic ethical and medicolegal principles relevant to Vascular Neurosurgery	Lectures seminars	Oral and written exams
G-Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H-Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I-Explain the impact of common health problems in the field of Vascular Neurosurgery	Seminars	Oral exam
J-Formulate management plans and alternative decisions in different situations in the field of Vascular Neurosurgery		

B-Intellectual outcomes as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Vascular Neurosurgery	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
- Order the following non invasive and invasive diagnostic procedures	Outpatient clinics Clinical rounds	Written ,Oral and clinical

○ Imaging studies in relationship to cerebrovascular diseases : - Various lab blood tests - Plain x ray skull - CT and CTA brain - MRI and MRA brain - Vessels angiography - Carotid duplex - Transcranial doppler		exams
B. Interpret the following non invasive and invasive diagnostic procedures ○ Imaging studies in relationship to cerebrovascular disease	Outpatient clinics Clinical round	Oral exams
C. Perform the following non invasive/invasive diagnostic and therapeutic procedures ○ Placement of a ventricular catheter via a burr hole or twist-drill craniostomy. ○ Lumbar puncture and cerebrospinal fluid (CSF) reservoir tapping. ○ The proper placement of a craniotomy flap in the planned surgical evacuation of hematoma. ○ Assist in the opening, exposure, and closure of cervical carotid procedures. ○ Assist and perform different craniotomies for vascular disease. ○ Make independent management decisions regarding ischemic and hemorrhagic stroke states. ○ Correctly interpret and respond to changes in patient status related to	Clinical rounds Operative room education	Oral and clinical exams Log book

systemic and neurological parameters. ○ Implement patient-care protocols regarding perioperative management. ○ Display independence in making decisions regarding the critical care of cerebrovascular patients. ○ Recognize the need for reporting to senior resident and attending staff such decisions. ○ Formulate preliminary and surgical planning. ○ Observe and assist in the performance of plaque removal and arterial closure during carotid endarterectomy. ○ Practice microsurgical techniques in the laboratory setting. ○ Identify the indications and controversies of endovascular catheter procedures, perioperative management ○ Apply the principles of intraoperative anesthetic management, proximal and distal control, temporary arterial occlusion, brain protective strategies, and intraoperative localization as applied to vascular disease. ○ Assist in the microsurgical management of highly complex cerebrovascular disease. ○ Plan and execute the craniotomy for the evacuation of intracranial hematomas. ○ Describe the exposure and treatment of intra-spinal vascular lesions.		

D. Develop and carry out patient management plans for the following problems : As mentioned A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
E. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F. Use information technology to support patient care decisions and patient education for Vascular Neurosurgery related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
G. Provide health care services aimed at preventing the conditions mentioned in A-A	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -	Portfolios Procedure/case Log book -Oral exam -Written exam -record review

	Present a case (true or simulated) in a grand round -Others	-Global rating -Simulation
H. Work with health care professionals, including those from other disciplines, to provide patient-focused care .	seminars, tutorial) - journal club, -Critically appraised topic, Educational prescription - Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills as in unit 1

Unit 7 Functional Neurosurgery

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: ○ Basic categories of pain syndromes. ○ Movement disorders, mainly: - Tremors - Rigidity - Dystonia - Chorea - Athetosis - Parkinson's disease. ○ Medically intractable epilepsy. ○ Typical trigeminal neuralgia, atypical trigeminal neuralgia, and trigeminal neuropathy. ○ Spasticity ○ Torticollis ○ Hyperhidrosis	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation
B- Mention the principles of: ○ Concept of pain ○ Rehabilitation in pain management. ○ Assessing pain in pediatric patients. ○ Different types of Pain procedures ○ Describe the anatomy and physiology of nociception within the peripheral and central nervous system. ○ The direct and indirect basal ganglion-thalamocortical motor pathways.	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

○ Functional anatomy of thalamic nucli. ○ Spinal cord anatomy pertinent to spinal ablative procedures for pain management. ○ Complications arising from implantation of pulse generators/receivers and infusion pumps. ○ Indications for peripheral neural blockade. Explain the principles of blocking procedures including the techniques and expected outcomes ○ Stereotactic frame placement in regard to target localization and purpose of procedure (biopsy, craniotomy, functional, radiosurgery). ○ The advantages and disadvantages of stereotactic biopsy compared to open biopsy procedures. ○ brachytherapy. ○ Trigeminal nuclei, root, ganglion and divisions. ○ Stereotactic radiosurgery. ○ Frame-based or frameless stereotactic craniotomies to non-stereotactic craniotomies. ○ The choice of neuroimaging (CT, MRI, angiography) for stereotactic procedures. ○ The benefits and limitations of frame-based stereotactic procedures. ○ The advantages and disadvantages of ablative procedures. ○ The advantages and disadvantages of radiosurgery and surgical resection for tumors and vascular malformations. ○ Microelectrode recordings of the thalamus and globus pallidus. ○ the indications for placement of depth electrodes.		

○ Surgical treatment of epilepsy. ○ Potential advantages and disadvantages for trigeminal rhizotomy procedures ○ Advantages and disadvantages of deep brain stimulation compared to ablative techniques. ○ The key aspects of intraspinal drug administration ○ Spinal cord stimulation (SCS) ○ The indications for peripheral nerve stimulation and contrast to spinal cord stimulation. ○ The role of neurectomy and neurolysis for pain control in nerve injury ○ The principles of radiofrequency lesioning. ○ The indications for surgical and non-surgical treatment of pain. ○ Facet block procedures. ○ Sympathectomy		
C-Mention Basics of the following rare diseases and conditions - Postherpetic neuralgia - Hemifacial spasm - psychosurgery	Regular department meeting. Journal club	Oral and written exams.
D- Explain the facts and principles of the relevant basic supportive sciences related to Functional neurosurgery	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating

	that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	-Simulation
E-Explain the facts and principles of the relevant clinically supportive sciences related to Functional Neurosurgery	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F- Describe the basic ethical and medicolegal principles relevant to Functional Neurosurgery	Lectures seminars	Oral and written exams
G-Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H-Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis discussion
I-Explain the impact of common health problems in the field of Functional Neurosurgery	Seminars	Oral exam
J-Formulate management plans and alternative decisions in different situations in the field of Functional Neurosurgery		

B-Intellectual outcomes as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Functional Neurosurgery	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures ○ Imaging studies in relationship to functional neurosurgical diseases: - EMG, NCV, EEG, nerve stimulation, evoked potentials - MRI, CT, CTA Brain - Functional imaging - Brain mappings	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures ○ Imaging studies in relationship to functional neurosurgical disease	Outpatient clinics Clinical round	Oral exams
D. Perform the following non invasive/invasive diagnostic and therapeutic procedures ○ Stereotactic craniotomies ○ Assist in DBS or ablative procedures for movement disorders ○ Assist in Pain management procedures ○ Assist in Epilepsy surgeries	Clinical rounds Operative room education	Oral and clinical exams Log book

E. Develop and carry out patient management plans for the following problems : As mentioned A-A	seminars, tutorial) - journal club, -Critically appraised topic,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
G. Use information technology to support patient care decisions and patient education for Functional Neurosurgery related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
H. Provide health care services aimed at preventing the conditions mentioned in A-A		Portfolios Procedure/case Log book -Oral exam

		-Written exam -record review -Global rating -Simulation
I. Work with health care professionals, including those from other disciplines, to provide patient-focused care .	seminars, tutorial) -journal club,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills as in unit 1

Unit 8 Peripheral nerves

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Explain update and evidence based etiology, clinical picture, diagnosis and management of the following common diseases and clinical conditions: ○ Entrapment neuropathies ○ The common metabolic/inherited neuropathies. ○ Peripheral nerve tumors. ○ Brachial plexus injury ○ Peripheral nerve injuries ○ Thoracic outlet syndrome	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -clinical exam -record review -Global rating -Simulation
B- Mention the principles of: ○ Nerve regeneration ○ Typical nerve injuries 1- Entrapment syndrome 2- Stretch injuries 3-Laceration injuries 4-Concussive injuries 5- Injection injuries ○ Upper versus lower motor neuron symptoms and signs in nerve injury: a. anatomical definition b. degree of atrophy c. distribution of weakness	Outpatient clinics. Clinical rounds	Oral, clinical and written exams.

d. reflex changes e. potential for recovery ○ The peripheral nervous system versus the central nervous system. ○ The major structural elements of a peripheral nerve. ○ The blood supply of the peripheral nerves. ○ The blood-nerve barrier. ○ The pathophysiological response to various injuries by a nerve: a. compression b. ischemia c. metabolic d. concussive e. stretch ○ The classification of nerve injury: a. Seddon classification b. Sunderland classification ○ The major peripheral nerves of body. ○ The nonoperative and operative treatment of entrapment syndromes. ○ coaptation ○ neurorrhaphy ○ neurotization ○ nerve transfer ○ Brachial plexus ○ lumbar plexus ○ Ulnar nerve decompression ○ The use of EMG/NCV in the management of peripheral nerve disorders. ○ NF1 and NF2. ○ Nerve repair techniques. ○ Intra-operative nerve evaluation ○ The use of nerve grafting ○ Adjuvant therapies in nerve injury.		
C-Mention Basics of the following rare diseases and conditions	Regular department	Oral and written exams.

○ Burn and electrical injury effects on nerves. ○ Apoptosis.	meeting. Journal club	
D- Explain the facts and principles of the relevant basic supportive sciences related to Peripheral nerves	seminars, tutorial) - journal club, -Critically appraised topic, -Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues) -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
E-Explain the facts and principles of the relevant clinically supportive sciences related to Peripheral nerves	seminars, tutorial) - journal club, -Critically appraised topic,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F- Describe the basic ethical and medicolegal principles relevant to Peripheral nerves	Lectures seminars	Oral and written exams
G-Describe the basics and measurement of quality assurance to ensure good clinical care in his field	Outpatient clinic Clinical rounds	Oral and written exams
H-Explain the ethical and scientific principles of medical research	Seminars lectures	Tested during thesis

		discussion
I-Explain the impact of common health problems in the field of Peripheral nerves	Seminars	Oral exam
J-Formulate management plans and alternative decisions in different situations in the field of Peripheral nerves		

B-Intellectual outcomes as in unit 1

C-Practical skills (Patient Care)

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Take history, examine and clinically diagnose different conditions related to Peripheral nerves	Outpatient clinics Clinical rounds	Written ,Oral and clinical tests Log book
B. Order the following non invasive and invasive diagnostic procedures ○ Obtain appropriate ancillary tests: a. EMG/NCV b. metabolic screens c. imaging studies	Outpatient clinics Clinical rounds	Written ,Oral and clinical exams
C. Interpret the following non invasive and invasive diagnostic procedures a. EMG/NCV b. metabolic screens c. imaging studies	Outpatient clinics Clinical round	Oral exams
D. Perform the following non invasive/invasive diagnostic and therapeutic procedures ○ Diagnostic nerve and muscle biopsy. ○ Obtain sural nerve for grafting.	Clinical rounds Operative room education	Oral and clinical exams Log book

○ Pre- and postoperative care of the patient with a peripheral nerve injury. ○ Evaluate a child with birth palsy. ○ A neurolysis/decompression. ○ Expose the brachial plexus. ○ Nerve repair. ○ Excise a nerve sheath tumor.		
E. Develop and carry out patient management plans for the following problems : As mentioned A-A	seminars, tutorial) - journal club, -Critically appraised topic,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
F. Counsel and educate patients and their family about diseases mentioned in A-A	seminars, tutorial) - journal club,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
G. Use information technology to support patient care decisions and patient education for Peripheral nerves related conditions.	seminars, tutorial) -journal club, -Critically appraised topic, -Educational prescription -Present a case (true or simulated) in a grand round -Others	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
H. Provide health care services aimed at		Portfolios Procedure/case

preventing the conditions mentioned in A-A		Log book -Oral exam -Written exam -record review -Global rating -Simulation
I. Work with health care professionals, including those from other disciplines, to provide patient-focused care .	seminars, tutorial) -journal club,	Portfolios Procedure/case Log book -Oral exam -Written exam -record review -Global rating -Simulation
J-Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets (Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive, timely and legible medical records)	Clinical round with senior staff	

D-General Skills as in unit 1

4. Course contents (topic s/modules/rotation
Course Matrix

Time Schedule: Second part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skill C	General Skills D
Unit 1	A-I	A-I	A-L	A-P
Unit 2	A-I	A-I	A-L	A-P
Unit 3	A-J	A-I	A-L	A-P
Unit 4	A-J	A-I	A-J	A-P
Unit 5	A-I	A-I	A-J	A-P
Unit 6	A-J	A-I	A-J	A-P
Unit 7	A-J	A-I	A-J	A-P
Unit 8	A-J	A-I	A-J	A-P

5. Course Methods of teaching/learning

1. Lectures
2. Scientific meetings
3. Clinical training on
   Outpatient clinic
   Clinical rounds
   Or training

4-Journal clubs

5-Educational prescription

6-Present a case (true or simulated) in a grand round

7-Simmulation

8-Hand on work shop

6. Course Methods of teaching/learning: for students with poor achievements

3 Lectures

4 Clinical training on
   Outpatient clinic
   Clinical rounds

3-Journal clubs

7. Course assessment methods:

i. Assessment tools: Oral tests
Clinical tests
Written tests
Log book

ii. Time schedule: At the end of the second part

iii. Marks: 1200

8. List of references

i. Lectures notes

Staff members print out of lectures and/or CD copies

ii. Essential books

Youman's Neurological Surgery

Greenberg's Handbook of Neurosugery

Principles of Neurosurgery

Samii's Essentials in Neurosurgery

iii. Recommended books

Richard Snell's Clinical Neuroanatomy

Fitzgerald's Neuroscience

iv-Periodicals, Web sites, … etc

Neurosurgery Journal

Journal of neurosurgery

Neurosurgery focus

Minimally invasive neurosurgery

British Journal of Neurosurgery

-Pan Arab Journal of - Neurosurgery

9. Signatures

Course Coordinator: Prof. Radwan Nouby	**Head of the Department:** Prof. Mohamad Khallaf
Date:9/ 2021	**Date: 9/2021**

ANNEX 2
Program Academic Reference Standards (ARS)

1- Graduate attributes for medical doctorate in Neurosurgery

***The Graduate (after residence training and medical doctorate years of study) must*:**

1- Demonstrate competency and mastery of basics, methods and tools of scientific research and clinical audit in Neurosurgery.

2- Have continuous ability to add knowledge to Neurosurgery through research and publication.

3- Appraise and utilise relevant scientific knowledge to continuously update and improve clinical practice.

4- Acquire excellent level of medical knowledge in the basic biomedical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care and scientific research.

5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.

6- Identify and create solutions for health problems in Neurosurgery.

7- Acquire an in depth understanding of common areas of Neurosurgery, from basic clinical care to evidence based clinical application, and possession of required skills to manage independently all problems in these areas.

8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professions, the scientific community and the public.

9- Function as teacher in relation to colleagues, medical students and other health professions.

10- Master decision making capabilities in different situations related to Neurosurgery.

11- Show leadership responsiveness to the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.

12- Demonstrate in depth awareness of public health and health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.

13- Show model attitudes and professionalism.

14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in Neurosurgery or one of its subspecialties.

15- Use recent technologies to improve his practice in Neurosurgery.

16- Share in updating and improving clinical practice in Neurosurgery.

2- Competency based Standards for medical doctorate in Neurosurgery

22.1- Knowledge and understanding

By the end of the program, the graduate should demonstrate satisfactory knowledge and understanding of

2-1-A- Established, updated and evidence- based theories, basics and developments of Neurosurgery and relevant sciences.

2-1-B- Basics, methods and ethics of medical research.

2-1-C- Ethical and medicolegal principles of medical practice related to Neurosurgery.**2-1-D-** Principles and measurements of quality in Neurosurgery.

2-1-E- Principles and efforts for maintainace and improvements of public health.

2- Intellectual skills

By the end of the program, the graduate should be able to demonstrate the following

2-2-A- Application of basic and other relevant science to solve Neurosurgery related Problems.

2-2-B- Problem solving based on available data.

2-2-C- Involvement in research studies related to Neurosurgery.

2-2-D- Writing scientific papers.

2-2-E- Risk evaluation in the related clinical practice.

2-2-F- Planning for performance improvement in Neurosurgery.

2-2-G- Creation and innovation in Neurosurgery..

2-2-H- Evidence – based discussion.

2-2-I- Decision making in different situations related to Neurosurgery.

2.3- Clinical skills

By the end of the program, the graduate should be able to

- ***Competency-based outcomes for Patient Care:-***

2-3-A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and

the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in Neurosurgery.

2-3-B- Master patient care skills relevant to Neurosurgery. for patients with all diagnoses and procedures.

2-3-C- Write and evaluate reports for situations related to the Neurosurgery.

2.4- General skills

By the end of the program, the graduate should be able to

- ***Competency-based outcomes for Practice-based Learning and Improvement***

2-4-A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management

2-4-B- Use competently all information sources and technology to improve his practice.

2-4-C- Master skills of teaching and evaluating others.

- ***Competency-based objectives for Interpersonal and Communication Skills***

2-4-D-Master interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, and other health professionals.

- ***Competency-based objectives for Professionalism***

2-4-E-Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Competency-based objectives for Systems-based Practice:

2-4-F-Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively use system resources to provide care that is of optimal value.

2-4-G- Participate in improvement of the education system.

2-4-H- Demonstrate skills of leading scientific meetings including time management

2-4-O- Demonstrate skills of self and continuous learning.

Annex 3, Methods of teaching/learning

Annex 3, Methods of teaching/learning

	Patient care	**Medical knowledge**	**Practice-based learning/ Improvement**	**Interpersonal and communication skills**	**Professionalism**	**Systems-based practice**
Didactic (lectures, seminars, tutorial)	X	X		X	X	X
journal club,	X	X	X			
Educational prescription	X	X	X	X	X	X
Present a case (true or simulated) in a grand round	X	X	X	X	X	
Observation and supervision	X		X	X	X	X
conferences		X	X	X		X
Written assignments	X	X	X	X	X	X
Oral assignments	X	X	X	X	X	X

Teaching methods for knowledge

- ❖ Didactic (lectures, seminars, tutorial)
- ❖ journal club
- ❖ Critically appraised topic
- ❖ Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues).
- ❖ Present a case (true or simulated) in a grand round
- ❖ Others

Teaching methods for patient care

- ❖ Observation and supervision /Completed tasks procedure/case logs
- ❖ On-the-job" training without structured teaching is not sufficient for this skill (checklists).
- ❖ Simulation is increasingly used as an effective method for skill/ teamwork training.

Teaching methods for other skills

- Written communication (e.g., orders, progress note, transfer note, discharge summary, operative reports, and diagnostic reports).

- Oral communication (e.g., presentations, transfer of care, interactions with patients, families, colleagues, members of the health care team) and/or non verbal skills (e.g., listening, team skills)

- Professionalism, including medical ethics, may be included as a theme throughout the program curriculum that includes both didactic and experiential components (e.g., may be integrated into already existing small group discussions of vignettes or case studies and role plays, computer-based modules) and may be modeled by the faculty in clinical practice and discussed with the resident as issues arise during their clinical practice.

Annex 4, Assessment methods

Annex 4, ILOs evaluation methods for MD students.

Method	Practical skills	K	Intellectual	General skills			
	Patient care	K	I	Practice-based learning/ Improvement	Interpersonal and communication skills	Professionalism	Systems-based practice
Record review	X	X	X		X	X	X
Checklist	X				X		
Global rating	X	X	X	X	X	X	X
Simulations	X	X	X	X	X	X	
Portfolios	X	X	X	X	X		
Standardized oral examination	X	X	X	X	X		X
Written examination	X	X	X	X			X
Procedure/ case log	X	X					
OSCE	X	X	X	X	X	X	X

Annex 4, Glossary of MD students assessment methods

- Record Review – Abstraction of information from patient records, such as medications or tests ordered and comparison of findings against accepted patient care standards.

- Chart Stimulated Recall – Uses the MD doctor's patient records in an oral examination to assess clinical decision-making.

- Mini clinical evaluation: Evaluation of Live/Recorded Performance (single event) – A single resident interaction with a patient is evaluated using a checklist. The encounter may be videotaped for later evaluation.

- Standardized Patients (SP) – Simulated patients are trained to respond in a manner similar to real patients. The standardized patient can be trained to rate MD doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MD doctor's performance.

- Objective Structured Clinical Examination (OSCE) – A series of stations with standardized tasks for the MD doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MD doctors.

- Procedure or Case Logs – MD doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.

- PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MD doctors.

- Case /problems – assess use of knowledge in diagnosing or treating patients or evaluate procedural skills.
- Models: are simulations using mannequins or various anatomic structures to assess procedural skills and interpret clinical findings. Both are useful to assess practice performance and provide constructive feedback.
- 360 Global Rating Evaluations – MD doctors, faculty, nurses, clerks, and other clinical staff evaluate MD doctors from different perspectives using similar rating forms.
- Portfolios – A portfolio is a set of project reports that are prepared by the MD doctors to document projects completed during the MD study years. For each type of project standards of performance are set. Example projects are summarizing the research literature for selecting a treatment option, implementing a quality improvement program, revising a medical student clerkship elective, and creating a computer program to track patient care and outcomes.
- Examination MCQ – A standardized examination using multiple-choice questions (MCQ). The in-training examination and written board examinations are examples.
- Examination Oral – Uses structured realistic cases and patient case protocols in an oral examination to assess clinical decision-making.
- Procedure or Case Logs – MD doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.
- PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MD doctors.

Annex 5, Program evaluation tools

By whom	Method	sample
Quality Assurance Unit	Reports Field visits	#
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits questionnaires	#
Senior students	questionnaires	#
Alumni	questionnaires	#

Annex 6, Program Correlations:

مصفوفة توافق المعايير القومية القياسية العامة لبرامج الدكتوراه مع المعايير الأكاديمية المعتمدة من كلية الطب - جامعة أسيوط لدرجة الدكتوراه في جراحة المخ و الأعصاب

I- General Academic Reference Standards (GARS) versus Program ARS

1- Graduate attributes

Faculty ARS	NAQAAE General ARS for postgraduate programs
1- Demonstrate competency and mastery of basics, methods and tools of scientific research and clinical audit in Neurosurgery.	1-إتقان أساسيات و منهجيات البحث العلمي
2- Have continuous ability to add knowledge new developments to Neurosurgery through research and publication.	2-العمل المستمر علي الإضافة للمعارف في مجال التخصص
3- Appraise and utilise scientific knowledge to continuously update and improve clinical practice and relevant basic sciences.	3-تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
4- Acquire excellent level of medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care and scientific	4-دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البينية بينها
5- Function as a leader of a team to provide patient care that is appropriate, compassionate for dealing with effective and health Problems and health promotion. 7- Acquire an in depth understanding of common areas of speciality, from basic clinical care to evidence based clinical application, and possession of skills to manage independently all problems in these areas.	5-إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص
6- Identify and create solutions for health problems in Neurosurgery.	6-تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها
5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health	7-إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص

problems and health promotion. 7- Acquire an in depth understanding of common areas of Neurosurgery, from basic clinical care to evidence based clinical application, and possession of skills to manage independently all problems in these areas.	
16- Share in updating and improving clinical practice in Neurosurgery . 9- Function as teacher in relation to colleagues, medical students and other health professions.	8- التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
15- Use recent technologies to improve his practice in Neurosurgery.	9-استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professions, the scientific community and the public. 5- Function as a leader of a team to provide patient care that is appropriate, effective and compassionate for dealing with health problems and health promotion.	10-التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
10- Master decision making capabilities in different situations related to Neurosurgery.	11-اتخاذ القرار في ظل المعلومات المتاحة
11- Show leadership responsiveness to the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.	12-توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
12- Demonstrate in depth awareness of public health and health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.	13-الوعي بدوره في تنمية المجتمع والحفاظ على البيئة

13- Show model attitudes and professionalism.	14–التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in Neurosurgery or one of its subspecialties. 15- Use recent technologies to improve his practice in Neurosurgery.	15–الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

2- Academic standards

Faculty ARS	NAQAAE General ARS for postgraduate programs
2.1. A- Established, updated and evidence- based theories, basics and developments of Neurosurgery and relevant sciences.	2-1-أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة
2.1. B- Basic, methods and ethics of medical research.	2-1-ب –أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
2.1. C- Ethical and medicologal principles of medical practice related to Neurosurgery.	2-1-ج- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
2.1. D- Principles and measurements of quality in Neurosurgery.	2-1-د مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
2.1. E- Principles and efforts for maintains and improvements of public health.	2-1-هـ – المعارف المتعلقة بآثار ممارسته المهنية على البيئة وطرق تنمية البيئة وصيانتها
2.2. A- Application of basic and other relevant science to solve Neurosurgery related problems.	2–2–أ –تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
2.2.B- Problem solving based on available data.	2–2–ب –حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
2.2.C- Involvement in research studies related to Neurosurgery.	2–2–ج –إجراء دراسات بحثية تضيف إلى المعارف
2.2. D- Writing scientific papers.	2–2–د– صياغة أوراق علمية
2.2. E- Risk evaluation in the related clinical practice	2–2—هـ تقييم المخاطر في الممارسات المهنية
2.2.F- Planning for performance improvement in Neurosurgery.	2–2–و –التخطيط لتطوير الأداء في مجال التخصص

2-2-G- Creation and innovation in the Neurosurgery.	2-2-ز- الابتكار /الإبداع
2.2. H- Evidence – based discussion.	2-2-ح- الحوار والنقاش المبني علي البراهين والأدلة
2.2.I- Discussion making in different situations related to Neurosurgery.	2-2-ط -اتخاذ القرارات المهنية في سياقات مهنية مختلفة
2.3. A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in Neurosurgery 2.3. B- Master patient care skills relevant to Neurosurgery or patients with all diagnoses and procedures.	2-3-أ -إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
2.3. C- Write and evaluate reports for situations related to the field of Neurosurgery	2-3-ب- كتابة و تقييم التقارير المهنية.
2.4.A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management	2-3-ج -تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص
2.4.B- Use competently all information sources and technology to improve his practice.	2-3-د - استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
2.4.A-Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management 2.4.G- Participate in improvement of the education system.	2-3-هـ -التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

II-Program ARS versus program ILOs

Comparison between ARS- ILOS for medical doctorate

(ARS)	(ILOs)
2-1- Knowledge and understanding	***2-1- Knowledge and understanding***
2-1-A- Established, updated and evidence-based Theories, Basics and developments of Neurosurgery and relevant sciences.	**2-1-A**- Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio behavioral science relevant to his speciality as well as the evidence – based application of this knowledge to patient care.
2-1-B Basic, methods and ethics of medical research.	**2-1-B-** Explain basics, methodology, tools and ethics of scientific medical, clinical research.
2-1-C- Ethical and medicologal principles of medical practice related to Neurosurgery field.	**2-1-C-** Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Neurosurgery.
2-1-D- Principles and measurements of quality in the Neurosurgery.	**2-1-D-** Mention principles and measurements of quality assurance and quality improvement in medical education and in clinical practice of Neurosurgery.
2-1-E-Principles and efforts for maintains and improvements of public health.	**2-1-E-** Mention health care system, public health and health policy, issues relevant to this speciality and principles and methods of system – based improvement of patient care in common health problems of the field of Neurosurgery .
***2-2- Intellectual skills*:**	***2-2- Intellectual skills:***
2-2-A-Application of basic and other relevant science to solve Neurosurgery related problems.	**2-2-A-** Apply the basic and clinically supportive sciences which are appropriate to Neurosurgery related conditions / problem / topics.

2-2-B-Problem solving based on available data.	**2-2-B-** Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Neurosurgery.
2-2-C- Involvement in research studies related to the Neurosurgery.	**2-2-C-** Plain research projects.
2-2-D Writing scientific papers.	**2-2-D-** Write scientific paper.
2-2-E-Risk evaluation in the related clinical practice.	**2-2-E-** Participate in clinical risk management as a part of clinical governance.
2-2-F-Planning for performance improvement in the Neurosurgery field.	**2-2-F-** Plan for quality improvement in the field of medical education and clinical practice in his speciality.
2-2-G-Creation and innovation in the speciality field.	**2-2-G-** Create / innovate plans, systems, and other issues for improvement of performance in his practice.
2-2-H-Evidence – based discussion.	**2-2-H-** Present and defend his / her data in front of a panel of experts.
2-2-I-Decision making in different situations related to Neurosurgery fields.	**2-2-I-** Formulate management plans and alternative decisions in different situations in the field of the Neurosurgery.

continuous (ARS)	continuous (ILOs)
2-3- Clinical skills:	***2/3/1/Practical skills (Patient care :)***
2-3-A- MD students must be able to provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health extensive level means in depth understanding and from basic science to evidence – based clinical application and possession of skills to manage independently all problems in his field of practice.	**2-3-1-A-** Provide extensive level of patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. ***p.s.*** Extensive level means in-depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in field of practice.
2-3-B- Master patient care skills relevant to Neurosurgery for patients with all diagnoses and procedures.	**2-3-1-B-** Provide extensive level of patient care for patients with all common diagnoses and for uncomplicated procedures related to Neurosurgery
	2-3-1-C- Provide extensive level of patient care for non-routine, complicated patients and under increasingly difficult circumstances, while demonstrating compassionate, appropriate and effective care.
	2-3-1-D- Perform diagnostic and therapeutic procedures considered essential in the field of Neurosurgery.
	2-3-1-E- Handles unexpected complications, while demonstrating compassion and sensitivity to patient needs and concerns.
	2-3-1-F- Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families in the Neurosurgery related situations.
	2-3-1-G- Gather essential and accurate

	information about patients of the Neurosurgery related conditions. **2-3-1-H** Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence and clinical judgment for the Neurosurgery related conditions. **2-3-1-I-** Develop and carry out patient management plans Neurosurgery related conditions. **2-3-1-J-** Counsel and educate patients and their families about Neurosurgery related conditions. **2-3-1-K-** Use information technology to support patient care decisions and patient education in all Neurosurgery related clinical situations. **2-3-1-L-** Perform competently all medical and invasive procedures considered essential for the Neurosurgery related conditions / area of practices. **2-3-1-M-** Provide health care services aimed at preventing the Neurosurgery related health problems. **2-3-1-N-** Lead health care professionals, including those from other disciplines, to provide patient-focused care in Neurosurgery related conditions**.**

2-3-C- Write and evaluate reports for situations related to the field of Neurosurgery	**2-3-1-O-** Write competently all forms of patient charts and sheets including reports evaluating these charts and sheets.(Write and evaluate a consultation note, Inform patients of a diagnosis and therapeutic plan, completing and evaluating comprehensive timely and legible medical records).
2-4- General skills **2-4-A-** Master practice-based learning and improvement skills that involves investigation and evaluation of their own patient care, appraisal and assimilation of scientific evidence, improvements in patient care and risk management	***2/3/2 General skills*** **2-3-2-A-** Demonstrate the competency of continuous evaluation of different types of care provision to patients in the different area of Neurosurgery. **2-3-2-B-** Appraise scientific evidence. **2-3-2-C-** Continuously improve patient care based on constant self-evaluation and life-long learning. **2-3-2-D**. Participate in clinical audit and research projects. **2-3-2-E-** Practice skills of evidence-based Medicine (EBM). **2-3-2-G-** Design logbooks. **2-3-2-H-** Design clinical guidelines and standard protocols of management. **2-3-2-I-** Appraise evidence from scientific studies related to the patients' health problems.

2-4-B- Use competently all information sources and technology to improve his practice.	**2-3-2-J-** Apply knowledge of study designs and statistical methods to the appraisal of clinical studies. **2-3-2-K**- Use information technology to manage information, access on-line medical information; for the important topics.
2-4-C- Master skills of teaching and evaluating others.	**2-3-2-F-** Educate and evaluate students, residents and other health professionals.
2-4-D- Master interpersonal and communication Skills that result in effective information exchange and teaming with patients, their families, and other health professionals.	**2-3-2-L**- Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:- • Present a case. • Write a consultation note. • Inform patients of a diagnosis and therapeutic plan Completing and maintaining comprehensive. • Timely and legible medical records. • Teamwork skills. **2-3-2-M-** Create and sustain a therapeutic and ethically sound relationship with patients. **2-3-2-N**- Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills. **2-3-2-O-** Work effectively with others as a member or leader of a health care team or other professional group.
2-4-E- Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical	**2-3-2-P-** Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.

principles, and sensitivity to a diverse patient population.	**2-3-2-Q-** Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices. **2-3-2-R-** Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.
2-4-F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively use system resources to provide care that is of optimal value. **2-4-G**- Participate in improvement of the education system.	**2-3-2-S-** Work effectively in health care delivery settings and systems related to Neurosurgery including good administrative and time management. **2-3-2-T-** Practice cost-effective health care and resource allocation that does not compromise quality of care. **2-3-2-U-** Advocate for quality patient care and assist patients in dealing with system complexities. **2-3-2-V-** Design, monitor and evaluate specification of under and post graduate courses and programs.
2-4-H- Demonstrate skills of leading scientific meetings including time management	**2-3-2-W-** Act as a chair man for scientific meetings including time management **2-3-2-S-** Work effectively in health care delivery settings and systems related to Neurosurgery including good administrative and time management.
2-4-O- Demonstrate skills of self and continuous learning .	From A to H

III-Program matrix
Knowledge and understanding

Course	Program covered ILOs				
	2/1/A	2/1/B	2/1/C	2/1/D	2/1/E
Course 1 : Medical statistics		✓			
course 2 : Research Methodology		✓			
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research			✓		
Course 4 Surgical Neuro -anatomy	✓				
Course 5 Surgical Neuropathology	✓				
Course 6 : Neurosurgery	✓	✓	✓	✓	✓

Intellectual

Course	Program covered ILOs								
	2/2/A	2/2/B	2/2/C	2/2/D	2/2/E	2/2/F	2/2/G	2/2/H	2/2/I
Course 1 : Medical statistics			✓	✓				✓	
course 2 : Research Methodology			✓	✓				✓	
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research								✓	
Course 4 Surgical Neuro -anatomy	✓								
Course 5 Surgical Neuropathology	✓								
Course 6 : Neurosurgery	✓	✓	✓	✓	✓	✓	✓	✓	✓

Practical Skills (Patient Care)

Course	Program covered ILOs							
	2/3/1/ A	2/3/1/ B	2/3/1/ C	2/3/1/ D	2/3/1/ E	2/3/1/ F	2/3/1/ G	2/3/1/ H
Course 1 : Medical statistics								
course 2 : Research Methodology								
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research				✓				✓
Course 4 Surgical Neuro -anatomy	✓	✓						
Course 5 Surgical Neuropathology	✓	✓						
Course 6 : Neurosurgery	✓	✓	✓	✓	✓	✓	✓	✓

Patient care

Course	Program covered ILOs						
	2/3/1/I	2/3/1/J	2/3/1/K	2/3/1/L	2/3/1/M	2/3/1/N	2/3/1/0
Course 1 : Medical statistics							
course 2 : Research Methodology							
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research	✓						✓
Course 4 Surgical Neuro -anatomy							
Course 5 Surgical Neuropathology							
Course 6 : Neurosurgery	✓	✓	✓	✓	✓	✓	✓

General Skills

Course	Program covered ILOs							
	2/3/2/A	2/3/2/B	2/3/2/C	2/3/2/D	2/3/2/E	2/3/2/F	2/3/2/G	2/3/2/H
Course 1 : Medical statistics		✓						
course 2 : Research Methodology		✓		✓	✓			
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research								
Course 4 Surgical Neuro -anatomy								
Course 5 Surgical Neuropathology								
Course 6 : Neurosurgery	✓	✓	✓	✓	✓	✓	✓	✓

General skill

Course	Program covered ILOs							
	2/3/2/I	2/3/2/J	2/3/2/K	2/3/2/L	2/3/2/M	2/3/2/N	2/3/2/O	2/3/2/P
Course 1 : Medical statistics	✓	✓	✓					
course 2 : Research Methodology	✓	✓						
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research				✓				
Course 4 Surgical Neuro -anatomy			✓	✓				✓
Course 5 Surgical Neuropathology			✓	✓				✓
Course 6 : Neurosurgery	✓	✓	✓	✓	✓	✓	✓	✓

General Skills

Course	Program covered ILOs						
	2/3/2/Q	2/3/2/R	2/3/2/S	2/3/2/T	2/3/2/U	2/3/2/V	2/3/2/W
Course 1 : Medical statistics							
course 2 : Research Methodology							
course 3 : Medicolegal Aspects and Ethics in Medical Practice and Scientific Research							
Course 4 Surgical Neuro -anatomy	✓		✓				
Course 5 Surgical Neuropathology	✓		✓				
Course 6 : Neurosurgery	✓	✓	✓	✓	✓	✓	✓

Annex 7, Additional information:

Department information:

Department of Neurosurgery
Faculty of medicine
Assiut University

Staff members:

M.Khallaf (Professor, Chief)
A.Mousa (Professor Emeritus)
R.ALKhayat (Professor Emeritus)
A.ELGheriany (Professor Emeritus)
R.Nouby (Professor Emeritus)
M.Hassan (Professor)
A.Abukresha (Assistant Professor)
M.ELsayed (Assistant Professor)
H.Hassan (Assistant Professor)
Wael M. Ali (Assistant Professor)
Abdelhakeem Abdelsattar (Assistant Professor)
Ahmed Shanawany (Assistant Professor)
Ahmed Abdallah Ismail (Assistant Professor)
Mohamed Ragaey (Assistant Professor)
Farrag Mohamed Farrag (Lecturer)
Ismail Taha (Lecturer)
Ali Abdelaleem (Lecturer)
Shady Abdelraheem (Lecturer)

Department quality control insurance for completing the program:

- Evaluation by the Department head and stuff members.
- Regular assessments.
- Log book monitoring.
- Recent equipments and Specialized Units.

Opportunities within the department:

The department offers non-paid research positions for postgraduate students to complete master and/or MD degree in neurosurgery.