UANL
UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN

FACULTAD DE MEDICINA

MODULE DESCRIPTION (ANALYTICAL PROGRAM).

1. Module Information Code:	
• Name of the Institution and School	Universidad Autónoma de Nuevo León, School of Medicine.
• Name of the Learning Unit	Surgical Sciences III (Neurosurgery, Ophthalmology, Otorhinolaryngology)
• Total classroom hours for theory and/or practice.	105 hours
• Total extra classroom hours	45 hours
• Course Modality	Schooled
• Type of academic period in which the module is offered	12th Semester
• Type of Learning Unit in the Curriculum	Compulsory
• Curriculum area:	ACFP-I.
• UANL credit points	5.
• Date of module creation:	May, 2017
• Date of last amendment:	January 9, 2021
• Person(s) responsible for the module design and amendments:	Dr. med. Ángel Martínez Ponce de León. Dr. med. Jesús Mohamed Hamsho. Dr. med. José Luis Treviño González. Dr. Mauricio Arteaga Treviño. Dr. med. Karim Mohamed Noriega. Dr. Marco Antonio Méndez Saenz.

2. Introduction:

The learning unit Surgical Sciences III, includes a core area in the formation of the Medical Surgeon and Midwife, as this promotes the educational process that goes from identification to evaluation, which involves the integration of basic and clinical knowledge, using teaching and learning activities developed in simulated and real scenarios. This learning unit is located in the twelfth semester and comprises three stages.

The three stages reinforce the elaboration of the clinical history and what it implies: interrogation, physical examination, interpretation of laboratory and image studies, diagnosis and treatment.

Stage 1 refers to Neurosurgery, where the student identifies neurosurgical pathologies through the elaboration and analysis of the clinical history.

Stage 2, referring to Ophthalmology, the student understands the basic concepts of ophthalmology for the general practitioner through the analysis of the main ophthalmological diseases for a correct initial management and timely referral to the third level of care.

Stage 3 deals with Otorhinolaryngology, its basic concepts and clinical manifestations in order to provide information on prevention and to perform the appropriate initial treatment and to regulate reference criteria to third level medical units.

Surgical Sciences III, culminates with the Integrated Learning Product which refers to the integration of a portfolio of clinical learning evidence on Neurosurgery, Ophthalmology and Otolaryngology.

3. Purpose(s)

The learning unit of Surgical Sciences III is realized in the twelfth semester, belongs to the Curricular Area of Integral Professional Formation and includes a core area in the formation of the doctor in the Curriculum of the Degree in Medicine of the UANL, it is part of an educational process in which basic and clinical knowledge is integrated in a multidisciplinary way, developing specific clinical competences, which implies the promotion, evolution and consolidation of the intellectual skills, with an integrating perspective: clinical reasoning (analysis, synthesis and evaluation), procedural skills and attitudinal skills, which prepares the student to exercise with success the medical-surgical activities required.

Its curricular relationship requires knowledge of the structure and function of the human body through the study of Anatomy, Physiology, Histology, Embryology, Microbiology, Biochemistry and Molecular Biology, Pathology, Clinical Pathology, Imaging, Quality and Safety in Care, in order to correlate this knowledge for the evaluation and solution of clinical-surgical problems, through the correct preparation of a clinical history and a physical examination, together with the interpretation of laboratory and imaging studies. It also requires the knowledge of Pharmacology and Toxicology that allows the correct selection of the treatment, taking into account their interactions, as well as with Bioethics for making relevant decisions in their field of influence.

The biopsychosocial perspective is reinforced by treating the patient as a human being with a family and social context and not just treating the disease in isolation.

4. Competences of the graduate profile

a. General competences contributing to this learning unit.

Instrumental Skills:

1. Apply autonomous learning strategies in the different levels and fields of knowledge that allow them make appropriate and relevant decisions in the personal, academic and professional fields.

3. Use the information and communication technologies as access tools to information and its transformation in knowledge, as well as for learning and collaborative work with cutting-edge techniques that allow its constructive participation in society.

4. Dominate their native language in oral and written form with correctness, relevancy, opportunity and ethics adapting its message to the situation or context, in order to transmit of ideas and scientific findings.

5. Employ logical, critical, creative and proactive thinking to analyze natural and social phenomena that let them make relevant decisions in its area of influence with social responsibility.

6. Use a second language, English in particular, with clarity and correctness to communicate in common, academic, professional and scientific contexts.

7. Develop inter, multi and transdisciplinary academic and professional proposals according to the best global practices to promote and consolidate the collaborative work.

8. Use methods and techniques of traditional and cutting-edge research for the development of their academic work, the practice of their profession and the generation of knowledge.

Personal and social interaction skills:

9. Maintain an attitude of commitment and respect towards the diversity of social and cultural practices that reaffirm the principle of integration in the local, national and international context with the purpose of promoting environments of peaceful coexistence.

10. Intervene in front of the challenges of contemporary society at the local and global level with a critical attitude and human, academic and professional commitment to help consolidate the general wellness and sustainable development.

11. Practice the values promoted by the UANL: truth, equality, honesty, liberty, solidarity, respect for life and anyone's, peace, respect for nature, integrity, ethics behavior and justice, within their personal and professional environment in order to make a sustainable society.

Integrative skills:

12. Make innovative proposals based on the holistic understanding of reality to help overcome the challenges of the interdependent global environment.

13. Take the lead according to social and professional needs to promote relevant social change.

14. Resolve personal and social conflicts in accordance with specific techniques in the academic field and their profession for the proper decision making.

15. Achieve the adaptability required in uncertain professional and social environments of our time to improve living conditions.

b. Specific competences of the graduate profile that contributes to the learning unit.

Scientific Basis of Medicine

1. Use the medicine scientific fundaments considering economical, psychological, social, cultural and environmental factors which contribute to the development and evolution of a disease for decision-making and medical actions.

Professional Clinical Practice

2. Solves clinical problems through deductive reasoning, interpretation of findings and definition of their nature with the aim of making decisions and determine action principles of the medical practice to follow in a responsible way, impacting individual and collective health.

3. Evaluate the development and evolution of the disease through the analysis of biomedical information and related physical, social and cultural factors, promoting health education and fostering preventive medicine.

4.- Manages properly patients with the most frequent diseases from a biopsychosocial perspective, through the application of knowledge, technical procedures and basic diagnostic, based on clinical guides and attention protocols in order to solve the main health problems from the Primary Health Care level from individuals and the community.

5. Manage common medical emergencies, applying treatment, procedures and minor interventions and make appropriate and timely referrals for patients requiring critical care for the preservation of life.

6.- Manages human resources, diagnostic interventions, therapeutic modalities, and options on health care according to national standards, promoting a quality culture in attention and guaranteeing patients' security.

Critical Thinking and Research

7. Applies the scientific method for the resolution of medical problems with an innovative, analytic and self-critical attitude for preventing, diagnosing and treating diseases.

Professional Values and Ethics

8.- Integrates professional values and ethics into his medical practice, making no difference due to gender, race, political or sexual preference, religious beliefs, activities developed, disabilities or socioeconomic level, promoting social inclusion and contributing to the population's well-being, their life quality and human development.

9.- Respects the patient's integrity keeping the patient's medical information as an essential part of their professional secret in order to preserve his rights.

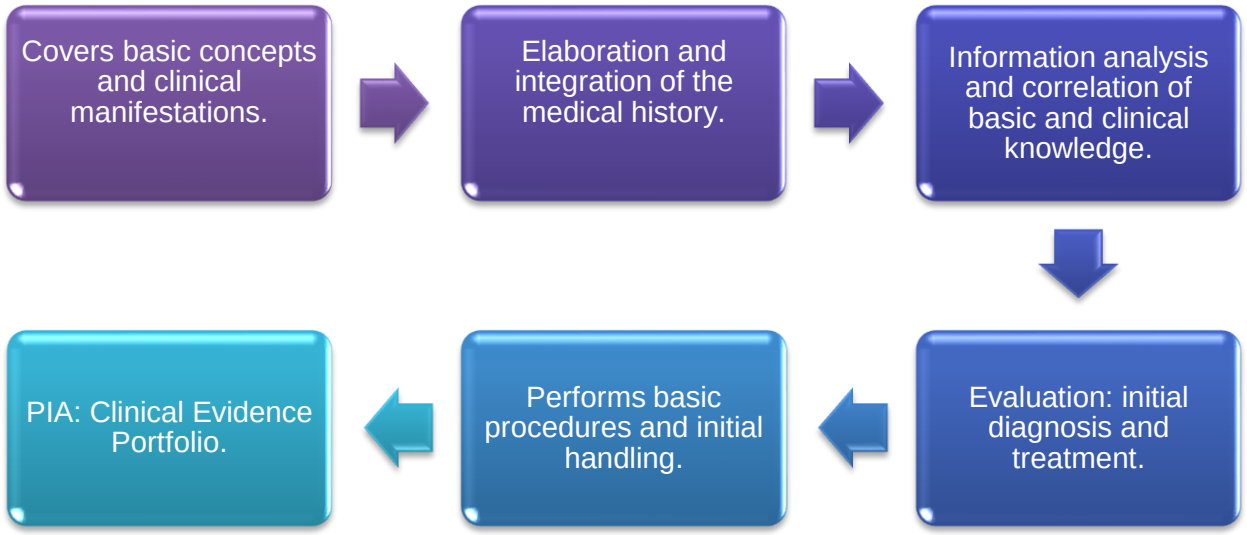
Organizational work

10.- Promotes an organizational work culture for the health field, acknowledging the multidisciplinary work, respect for institutional policies and the observance of rules in order to contribute to a comprehensive treatment of patients.

Communication

11.- Applies effective communication principles, establishing a respectful and sympathetic relationship with the patient, relatives, the community and other health professionals in order to use the information properly.

5. Course Roadmap:



6. Structuring into stages or phases

Stage 1. Neurosurgery.

Component(s) of the competence:
Identify the neurosurgical pathologies in patients that may require specific treatments by means of medical records and neurological-neurosurgical exploration, in order to provide initial treatment and/or referral to third level medical units to complete their clinical diagnosis, and medical and/or surgical treatment.

Evidence of student learning	Performance Criteria	Learning activities	Content	Resources
Evaluation of performance in clinical practice of Neurosurgery.	**Activities performed in the Consultation:** Perform correctly: Properly prepares the medical history of the neurosurgical patient. Summarizes and presents the evolution of the neurosurgical patient. Performs the physical examination of the neurosurgical patient. Discusses the interpretation of	Presentation of the contents in oral form, with visual support. In the oral presentation, the professor interacts with the students in relation to the knowledge obtained in the review of material individually through direct questions and involving the whole group. The professor shows clinical examples and asks analysis questions to corroborate the integration of concepts.	**Conceptual** Introduction to Neurosurgery Cranioencephalic Trauma: • Dome and base fractures • Shock. • Cerebral contusión and decompression. • Brain herniation. • Glasgow Coma Scale. • Extradural, subdural, intracerebral hematoma. Spinl cord trauma:	• Classrooms of the School of Medicine. • Outpatient and inpatient room of Neurosurgery, University Hospital, UANL. • Textbooks. • Reference books. • Research articles. • Internet. • Computer.

	neuroradiological imaging studies. **Discussion group activities.** Perform correctly: • Presentation and discussion of clinical neurosurgical cases. • Exposure of selected neurosurgical topics. • Explains the key points/relevant data of the topic or problem. • Analyzes and interprets correctly the information of the neurosurgical patient's damages or problems. • Active participation during the discussion. **Activities performed during On-call Duty.**	Exemplification of pathologies by the professor. Interaction with students through questions with content derived from the case or example presented. Students correlate their basic knowledge with the statements presented and draw conclusions. Through the strategy of problem-based learning, students solve various clinical cases. The students make rotations in the Neurosurgery room and the professor corroborates the integration of the theoretical concepts	• Shock and spinal section. • Intraspinal hematoma. • Brown-Sequard syndnrome. • Neurogenic shock. Herniated intervertebral, cervical, dorsal and lumbar discs: • Dermatomas. • Treatment. Central Nervous Systemn Tumors in Pediatrics: • Infratentorial. • Medulloblastoma. • Astrocytoma. • Ependymoma. • Stem gliomas. • Choroid plexus tumors. • Supratentorials • Craniopharyngiomas.	• Projector. • PowerPoint presentations. • Videos. • Painting board.

	Performs correctly: • Performs the assessment of the neurosurgical patient. • Assistance in neurosurgical procedures. • Evaluation-interpretation of image studies. • Participates in the visit pass. • Performs general care of the hospitalized patient.	through the discussion of the cases of patients seen during this rotation. Students rotate in the Neurosurgery outpatient clinic to observe the procedure and take the medical history and perform the first and subsequent neurological physical examination of the neurosurgical patient. The professor coordinates and supervises the activities done by the students in guards and outpatients. The professor leads the analysis of clinical cases and assigned topics in discussion groups.	• Optic-hypothalamic gliomas. • Pineal tumors. Spontaneous subarachnoid hemorrhage: • Intracraneal aneurysms. • Cerebral arteriovenous malformations. • Spontaneous intracerebral hemorrhage. • Carotid-Cavernous fistula and treatment. Epilepsy Surgery Generalities of Brain Tumors I • Classification	

			Generalities of Brain Tumors II: • Most commons intracranial tumors in adults. • Neuroendoscopy. Congenital malformations of the CNS: • Craniosynostosis. • Dysrraphisms. • Spina bifida. • Meningocele. • Myelomeningocele. • Lipomyelomeningocele • Chiari Malformacións. • Dandy-Walker syndrome. • Hydrocephalus. Spinal Tumors: • Syringomyelia. • Malformación de Arnold-Chiari	

			malformation and treatment. Generalities about stereotactic neurosurgery and applications of the tecnique. Endovascular Neurosurgery and Interventional Neuroradiology: • Coil Aneurysms. • Malformations. • Cerebral arteriovenous. • Tumors Angioembolization. Ischemic cerebral vascular disease: • Neuroendovascular rescue.	

			Procedural Integration of medicla history. Physical examination of the neurosurgical patient. Initial clinical evaluation of the neurosurgical patient. Care, attention and monitoring of the neurosurgical patient. **Attitudinal** Respect for patient, medical and nursign staff, and colleagues. Responsability and cooperation with patient, medical and nursing staff. Attendance and participation in activities in time. Confidentiality in handling information. Respect for the dress code.	

Stage 2. Ophthalmology.

Component(s)of the competence:
Understand the basic concepts of ophthalmology for the general practitioner through the analysis of the main ophthalmological diseases to manage, timely refer to the third level of care, as required by the disease.

Evidence of student learning	Performance Criteria	Learning activities	Content	Resources
Evaluation of performance in clinical practice of Ophthalmology.	**Do the following correctly:** Measuring visual acuity • No correction. • With pinhole. • With correction. • Close. Examination of Pupillary Reflexes • Photomotor. • Consensual. Exploration of eye movements. Exploration of visual fields by confrontation. Macroscopic Eye Examination • Eyelids and eyelashes. • Conjunctive.	During the theoretical classes, the professor develops the topic to be treated through a visual presentation, and the strategy of asking direct questions to the students is used, and they in turn, expose their doubts. Exemplification of pathologies by the professor. Interaction with students through questions with content derived from the case or example presented. Students correlate their basic knowledge with the statements presented and draw conclusions. In the practice workshops the students perform aspects of the ophthalmological examination of relevance to the general practitioner such as:	**Conceptual** • Anatomy, Physiology and Optics • External diseases • Dry eye and leukoma • Cataracts • Orbit • Eyelids and tear duct • Retina: Diabetic Retinopathy and age-related macular degeneration • Glaucoma • Pediatric ophtalmology and amblyopia	• Classrooms of the School of Medicine. • Outpatient and inpatient room of Neurosurgery, University Hospital, UANL. • Textbooks. • Reference books. • Research articles. • Internet. • Computer • Projector.

	• Sclera. • Cornea. • Anterior chamber. • Crystalline. Use of the direct ophthalmoscope • On/Off • Change of lights and intensities. • Change of dioptres. Exploration of the red reflection. Fundus examination with direct ophthalmoscope • Optic nerve. • Blood vessels. • Retina. • Macula.	Measuring visual acuity, Evaluating pupillary reflexes, Red reflex, Eye movements, visual fields by confrontation and macroscopic eye exploration. The student is exposed to the equipment and use of the direct ophthalmoscope in the technique of exploration of the fundus.	• Strabismus and Neuro-ophtalmology • Uvea Ocular trauma and Emergencies in ophtalmology **Procedural** Ophtalmology Exploration: • Visual acuity measurment. • Perform pupillary reflexes, eye movements, visual fields by confrontation. • Macroscopic eye exploration. - Use of ophtalmoscope. • Fundus eye and red reflesx exploration technique with ophtalmoscope **Attitudinal** Attendance and participation in activities in time. Confidentiality in handling information. Respect for the dress code.	• PowerPoint presentations. • Videos. • Painting board.

Stage 3. Otorhinolaryngology.

Component(s) of the competence:

Analyze the basic knowledge and clinical manifestations of Otorhinolaryngology through the analysis of clinical cases, in order to provide information on prevention and adequate initial treatment and to standardize reference criteria to third level medical units.

Evidence of student learning	Performance Criteria	Learning activities	Content	Resources
Evaluation of the performance in clinical practice of Otorhinolaryngology.	**Evaluation in the Consultation:** • Introduced with the patient. • Performs initial and/or subsequent interrogation. • Performs initial examination. • Discusses the case with the professor, in order to establish diagnostic possibilities and/or laboratory and imaging studies. • Discusses and initiates treatment according to clinical suspicion. • Applies local anesthetic via topic. **Clinical practice-workshop log: (Ear, Nose and Sinuses, Oral**	Presentation of the contents in oral form, with visual support. In the oral presentation, the professor interacts with the students in relation to the knowledge obtained in the revision of material in an individual way, uses the strategy of asking direct questions to the students and they in turn, expose their doubts. The professor will corroborate the integration of concepts and provide clinical examples. Students correlate their basic knowledge with the statements presented and draw conclusions.	**Conceptual** Ear • Otitis media and is complications • Otitis externa and its compications • Vertigo • Hypoacusis Nose and sinuses • Laryngology tumos • Dysphonies Oral cavity and pharynx • Tonsillitis • Head and neck pathology **Procedural** Integration of medical history. • Otorhinolaryngological exploration. • Analyze and discuss the natural history of the evolution of the illnes and/or behaviour	• Classrooms of the School of Medicine. • Outpatient clinic of Otolaryngology and Head and Neck Surgery, University Hospital, UANL. • Textbooks. • Reference books. • Research articles. • Internet. • Computer. • Projector. • PowerPoint presentations. • Videos.

	Cavity and Pharynx, Larynx and Neck) • Exploration. • Foreign body extraction. • Interpretation of examinations and laboratory tests. • Second level reference criteria. **Workshop performance evaluation:** • Identifies anatomical regions. • Manipulates the instrument properly. • Perform the exploration technique correctly. • Requests the appropriate material. • Make a diagnosis. **Discussion of Clinical Cases:** **Preparation of the theme** (The content is presented in a clear way, concise and congruent with the theme).	Students rotate in the Otolaryngology and Head and Neck Surgery outpatient clinic to observe procedures and learn about the materials and then apply the concepts to develop the clinical skills described. Students participate in workshops in which they perform practical demonstrations related to anatomical identification and use of instruments to achieve clinical diagnosis. The problem-based learning strategy is used in the clinical case discussion sessions, in which knowledge for analysis and synthesis is integrated into a clinical diagnosis and initial treatment.	of the patient in order to establish clinical diagnoses and support the treatment. • Interpreting images and laboratory studies. • Extracting foreing bodies in Otorhinolaryngology. **Contenido Actitudinal** - Respect for patient, medical and nursign staff, and colleagues. - Responsability and cooperation with patient, medical and nursing staff. - Attendance and participation in activities in time. - Confidentiality in handling information. - Respect for the dress code.	

	Participation (You can answer all the questions raised about the topic). **Development of the theme** (The development is congruent with the above-mentioned background). **Mastery of the subject** (Demonstrates excellent knowledge of the subject). **Results and argumentation** (Identifies and discusses the conclusions, its implications and he/she considers the contexts, information and evidence).			

7. Summative Evaluation

- **Evaluation in the clinical practice of Neurosurgery:**
  - Consultation
  - Group discussion activities
  - On-call duty

- **Exam**

- **Evaluation in the clinical practice of Ophthalmology**
  - Measuring visual acuity
  - Pupillary reflex scanning
  - Exploration of eye movements
  - Exploration of visual fields by confrontation
  - Macroscopic Eye Examination
  - Use of the direct ophthalmoscope
  - Red Reflex Scanning
  - Fundus examination with direct ophthalmoscope

- **Exam**

- **Evaluation in the clinical practice of Otorhinolaryngology**
  - Consultation
  - Clinical practice in workshops
  - Discussion of clinical cases

- **Exam**

Total……100%

8. Course Integrative Product:

Portfolio of clinical evidence.

9. References

Neurosurgery:

Textbook:

Martínez-Ponce de León AR., Morales-Gómez JA. (2016) *Neurocirugía para estudiante de medicina*. Monterrey, México: Tilde Editores.

Suggested bibliography and other reference works

Greenberg, M.S. (2007). *Handbook of Neurosurgery* (6th. ed). [N.Y.USA]: Thieme Medical Publishers.
Besson Mc Dermott, Textbook of Medicine, part x. Disorders of the nervous system and behavior.
Matson, Neurosurgery of infancy and childhood.
Russell, Pathology of the nervous system.
Eyzaguirre, Phisiology of the nervous system.
Ford, Diseases of the nervous system in infancy, childhood and adolescence.
Ganong, sistema nervioso.
Merrit, Neurología.
Chusid, Neuroanatomía correlativa y neuroanatomía funcional.
Segura, Neuroanatomía funcional y síndromes neurológicos.
Mayo Clinic and Mayo Fundation, Examen clínico en neurología.
Maumenthler, Neurología.
Fustinioni, Sistema nervioso. Semiología.
Lockhart, Anatomía Humana.
Taveras & Wood, Diagnostic Neuroradiology.
Milhorat, Pediatric Neurosurgery.
Vinken y Bruyn, Handbook of clinical neurology.
Wechsler, Neurologia Clínica.
Youmans, Neurological Surgery.
Williams and Wilkins, Clinical Neurosurgery.
Guías de práctica clínica CENETEC.

Medical journals:

Journal of Neurosurgery.

Neurosurgery.
Surgical Neurology.
Journal of Neuroradiology.
Journal of International Neuroradiology.

Ophthalmology:

Textbook:
Oftalmología General. Vaughn y Asbury. Manual Moderno. 14 ed.
Oftalmología: Fundamentos y Conceptos. Frank W. Newel. Ed. Mosby.

Otolaryngology:
Oídos, Nariz y Garganta y Cirugía de Cabeza y Cuello. Autor: Jesús Ramón Escajadillo.
Guías de Otorrinolaringología de la Práctica Clínica del CENETEC.

APPENDIX.

ASSESSMENT AND WORKLOAD

Module workload		Number of hours	Percentage
Contact hours	Class-based instruction	40h (38.09%)	70%= 105 hours
	Evaluation of clinical practice	60h (57.14%)	
	Exam taking	3h (2.85%)	
	Course integrative product (CIP)	2h (1.90%)	
Independent study	Study	39h (86.66%)	30%= 45 hours
	Exam preparation	6h (13.33%)	
Total hours of the workload: 30 hours X 5 credits UANL/ECTS*		150 h	

*European Credit Transfer and Accumulation System
1 UANL credit = 30 hours

NOTE: Rubrics, checklists and evaluation formats are elaborated by using the performance criteria described in each stage of the module.

SUPLEMENTO COVID-19

Siguiendo las recomendaciones de la Secretaría de Salud del país y la Rectoría de la Universidad, ante la coyuntura de salud COVID-19, la organización de la docencia desde marzo del 2020, seguirá un modelo híbrido, donde la docencia se ajustará a los horarios aprobados por la Secretaría de Salud siguiendo un modelo de Presencialidad / No presencialidad en la medida en que las circunstancias sanitarias y la normativa lo permitan. Los estudiantes asistirán a las clases de manera no presencial mediante la transmisión de las mismas de manera síncrona/asíncrona vía “on line”.