

MODULE DESCRIPTION (SUMMARY PROGRAM).

1. Module Information Code:	
• Name of the Institution and School	Universidad Autónoma de Nuevo León, School of Medicine
• <u>Name of the Learning Unit</u>	Biochemistry and Molecular Biology
• Total classroom hours for theory and/or practice.	129 hours
• <u>Total extra classroom hours</u>	141 hours
• Course Modality	Schooled
• Type of academic period in which the module is offered	1st semester
• <u>Type of Learning Unit in the Curriculum</u>	Compulsory
• Curriculum area:	ACFB Basic
• <u>UANL credit points</u>	9
• Date of module creation:	September 14, 2014.
• Date of last amendment:	March 19, 2020.
• <u>Person(s) responsible for the module design and amendments:</u>	Dra. C Ana María Rivas Estilla.

2. Purpose(s)

This learning unit, through the study of Biochemistry and Molecular Biology, the student analyzes the importance of biochemistry for medicine, the structure and function of the main organism components: amino acids, carbohydrates, lipids, nucleotides, vitamins, and hormones. The will also analyze the metabolic processes from such compounds which make possible for the living organism fulfill its functions in order to have a better understanding of the way biochemical alterations provoke different pathologies.

In the molecular biology phase, students analyze DNA, RNA, and proteins as well as the interactions that occur among them during the cell's or organism's growth and differentiation processes. Additionally, we also establish an organism's general homeostasis molecular basis in order to analyze the causes an inherited or acquired disease has, as well as the basis for different techniques which are used in the molecular diagnostic.

This learning unit allows setting the fundamentals for the medical practice, and provides the basis for a later study of physiology, genetics, pharmacology and toxicology, microbiology, clinical pathology and Medical Sciences I and II. It contributes to the Medical Surgeon and Obstetrician's graduate profile by providing the basis of knowledge needed for maintenance of the body homeostasis, and understand thoroughly the interrelationship between health and disease.

3. 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.
2. Use the logical, formal, mathematical, iconic, verbal and non-verbal languages according to their stage of life, in order to understand, interpret and express ideas, feelings, theories and streams of thinking with an ecumenical focus.
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.

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 Base of Medicine

1.- To use the scientific foundations of medicine by considering the economical, psychological, social, cultural and environmental factors which contribute to the development and evolution of diseases in order to make decisions and take medical actions.

Professional Clinical Practice

2.- To solve clinical problems through deductive reasoning, interpretation of findings and the definition of their nature in order to make decisions and determine principles of actions of the medical practice to be followed in a responsible way, impacting individual and collective health.

Critical thinking and research

7.- To apply the scientific method in the resolution of medical problems with an innovative, analytical and self-critical attitude toward the prevention, diagnosis and treatment of diseases.

Communication

11.- To apply the principles of effective communication by establishing a respectful and empathetic relationship with the patient, relatives, the community and other health professionals in order to use the information properly.

4. Summative Evaluation

- Learning Activity
- Clinical case
- Laboratory
- Exam
- Evaluation
- Course Integrative Product (CIP)

5. Course Integrative Product.

Bibliographic research with its corresponding written report as well as a multimedia presentation. These will be evaluated by professors from the department with specific evaluation instruments.

The students research a topic which involves a metabolic situation which appears in situations such as pregnancy, exercising, or any other disease in which the metabolic alterations in the organism can be described.

The requirements are that students develop their research consulting several resources of information and attend two follow-up sessions with the professor to clarify doubts.

6. References

Ferrier, D. R. (2018). *Bioquímica*. Barcelona: Lippincott Williams & Wilkins 7a Edición
McKee, T. & McKee, J. (2014). *Bioquímica: las bases moleculares de la vida*. México: McGraw-Hill.
Vasudevan D. M., Sreekumaris S, Vaidyanathan K. (2011). *Bioquímica*. México: Cuellar-Ayala.
Manual de Laboratorio de Bioquímica. (Agosto-Diciembre 2019). Departamento de Bioquímica y Medicina Molecular.
Monterrey, México: Facultad de Medicina, UANL.

Electronic resources:

International Federation for clinical chemistry and laboratory medicine: <http://www.ifcc.org/>
The Journal of biological chemistry/ F1000: <http://www.jbc.org/browserellinks>
HB Minireview: <http://academic.research.microsoft.com>
Cab Direct: <http://www.jstage.jst.go.jp/browse/bbb/-char/en>

