

SYNTHETIC PROGRAM

1. Module identification code:	
Name of the institution:	Universidad Autónoma de Nuevo León
Name of the school:	School of Medicine
Name of the degree program:	Clinical Chemistry
Name of the course (learning unit):	Cell Biology
Total number of class hours-theory and practice:	100
Class hours per week:	5
Independent study:	50
Course modality:	Face-to-face instruction
Module level:	First semester
Core/elective module:	Core
Curriculum area:	ACFB
UANL credit points:	5
Create date:	May 04 th , 2017
Date of last amendment made:	July 12 th , 2022

Person(s) responsible for the design and amendment of the module:	Dr.C. Salomón Alvarez Cuevas M. Sc. Gemma Guadalupe Estrada Martínez ME. Claudia Irene Sánchez Santillán
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2. Purpose:

Cell Biology, as a theoretical-practical learning unit, aims to develop competences related to the knowledge and understanding of the evolutionary processes that led to the formation of the cell, identify levels of biological organization, and position the cell as the basic unit for building tissues, organs, and systems in the human body. This will enable future graduates to apply microscopic and cytomorphological techniques used to analyze cellular structure and function. Students develop general competencies such as applying learning strategies during their daily work, expressing themselves accurately in both oral and written forms, managing information technologies, and engaging in collaborative work to research current topics related to the learning unit. They employ logical thinking when analyzing natural processes like cellular structure and function through microscopic methods, making decisions, and justifying the usefulness of clinical laboratory tests by applying research and clinical diagnostic laboratory methods and techniques.

The methodology applied in the course enables students to develop specific competencies through which they will be able to obtain, handle, and store biological samples while respecting the guidelines of Mexican and international official standards, this prepares them for subsequent analysis and interpretation of results, all while applying diagnostic and research techniques with high standards of knowledge of their fundamental, students will acquire skills and abilities in the field of microscopy and biological specimen processing techniques, as well as discuss the results of the applied methods, all while upholding professional and ethical values.

During the time the student takes the Cell Biology learning unit, they will be applying the skills they acquire simultaneously in the Technology Application learning unit. Upon completing the Cell Biology unit, the student will have introductory elements for the learning units in subsequent semesters related to the bioclinical field. For Basic Microbiology, they will have knowledge of the structure and function of prokaryotic cells and the main differences with eukaryotic cells, for morphological sciences, they will understand cellular structure and function and the mechanisms of interaction that form tissues as the next level of biological organization, for physiology, biochemistry, pathology, and molecular biology, they will complement their foundational knowledge by providing the basis for cellular structure and function as a fundamental unit of the structure and function of organs and systems. Cell Biology will, together with other basic learning units, enhance understanding of the normal functioning of biological organisms and aid in the interpretation of clinical laboratory diagnostic studies.

3. Competences of the graduate profile:

General competences to which this module (learning unit) contributes:

- *Instrumental skills*

1. To apply autonomous learning strategies at different levels and fields of knowledge that allow them to make timely and relevant decisions in the personal, academic and professional spheres.
2. To manage Digital Information, Communication, Knowledge and Learning Technologies (TICCAD), in academic, personal and professional environments with cutting-edge techniques that allow their constructive and collaborative participation in society.
3. To master their mother tongue orally and in writing with correctness, relevance, timeliness and ethics, adapting their message to the situation or context, for the transmission of ideas and scientific findings.
4. To use logical, critical, creative and proactive thinking to analyze natural and social phenomena that allow them to make relevant decisions in their sphere of influence with social responsibility.
5. To use traditional and cutting-edge research methods and techniques for the development of their academic work, the exercise of their profession and the generation of knowledge.

- *Personal and social interaction skills:*

1. To practice the values promoted by the UANL: truth, equity, honesty, freedom, solidarity, respect for life and others, peace, respect for nature, integrity, ethical behavior and justice, in their personal and professional environment to contribute to building a sustainable society.

• *Integrative skills:*

1. To resolve personal and social conflicts, in accordance with specific techniques in the academic field and in their profession for appropriate decision-making.

• ***Specific competences of the graduate profile to which this module (learning unit) contributes:***

1. To execute physical, chemical and/or biological procedures in the collection, handling, storage and analysis of samples to contribute to a reliable clinical, toxicological, chemical, food, forensic and environmental diagnosis.
2. To handle chemical and biological materials following official Mexican and/or international standards that guarantee their correct use and disposal to preserve health and the environment.

3. Summative evaluation:

- Daily evidence
- Laboratory reports
- Partial exams
- PIA

5. Course integrative project/product:

Case resolution divided into two stages: in the initial stage, the student will observe a collection of biological preparations under the microscope, identifying the type of tissue, processing technique, staining method, and describing the microscopic components that constitute it; in the second stage, they will respond in writing to theoretical questions related to the cytohistological structure and function of each case.

6. Fuentes de apoyo y consulta:

- Cooper, G. M. & Hausman, R. E (2017). La Célula. Editorial Marbán. 7ª ed. ISBN 9788417184001
- Gallagher, S. & Chakavarti, D. (2008). Técnicas de biología molecular. Julio de 2018, de Jove Sitio web: www.jove.com/index/details.stp?id=759
- García Peláez, I. (2014). SOS Biología Celular y Tisular. Julio de 2018, de Universidad Autónoma de México Sitio web: <http://sosbiologiacelularytisular.blogspot.com/>
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- Karp, G. (2014). Biología celular y molecular. Conceptos y experimentos. Editorial McGrawHill. 7ª ed. ISBN 9786071511379
- Kierszenbaum, A. L. & Tres, L. (2016). Histología y biología celular. Elsevier España. 4ª ed. ISBN 8490229600
- Nazir. (2009). DNAtube. Julio, 2018, de DNAtube Sitio web: <https://www.dnatube.com/>
- Paniagua, R. (2007). Biología Celular. Editorial McGrawHill-Interamericana. 3ª ed.
- Smith, C.A. & Wood, E.J. (1997). Biología celular. Addison-Wesley Iberoamericana S.A. 1ª ed. ISBN 0-201-65379- 6
- Universidad de Arizona. (2002). Biología Celular. Julio de 2018, de Universidad de Arizona Sitio web: <http://www.biologia.arizona.edu/cell/cell.html>