

## 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):	Selected Topics in Microbiology
Total number of class hours-theory and practice:	80
Class hours per week:	4 hours
Independent study:	10
Course modality:	Face-to-face instruction
Module level:	Eighth semester
Core/elective module:	Elective
Curriculum area:	ACFP-F
UANL credit points:	3
Create date:	October 9 <sup>th</sup> , 2018
Date of last amendment made:	January 19 <sup>th</sup> , 2022
Person(s) responsible for the design and amendment of the module:	Dr. C. Alejandro Sánchez González

## **2. Purpose:**

The learning unit contributes to achieving the profile of the graduate as a chemical-clinical biologist by developing the necessary skills to fully understand the fundamentals of the most common techniques and carry out the processes used in a research or clinical laboratory through design, selection and/or execution of different analysis methods, adequately interpreting the results to correctly identify the pathogens that cause disease as well as the generation of frontier knowledge under strict quality control to collaborate in the prevention, diagnosis, control and treatment of diseases.

Regarding the general competences, the student will be able to use traditional and avant-garde research methods and techniques to develop their academic work in the laboratory with the aim of finding the necessary answers in the exercise of their profession by taking decisions individually or jointly with colleagues. The knowledge generated will allow them to intervene critically and with human commitment in the face of challenges of contemporary society to consolidate general well-being and sustainable development while generating cutting-edge knowledge in their field.

In the learning unit of Selected Topics in Microbiology, the student acquires specific skills that allow him to answer scientific questions through correct decision making for the execution of appropriate physical, chemical and/or biological procedures to subsequently analyze and interpret the results obtained under strict quality standards that will guarantee the reliability of the results obtained.

The learning unit of Selected Topics in Microbiology has a strong relationship with Basic Microbiology, Medical Bacteriology and Medical Parasitology from which knowledge is obtained of some of the main pathogens that generate infectious diseases, as well as Cellular Biology and Biochemistry in where they understand the cellular processes involved in disease processes. With the Molecular Biology learning unit where they study the bases of the main laboratory techniques for the identification of pathogens that allow the correct diagnosis of diseases as well as with Immunology in which they understand the elements that participate in the immune response for the prevention, diagnosis and treatment of the disease.

In addition, the learning unit of Selected Topics in Microbiology provides the student with basic knowledge for the development of Social Service, Professional Practices and for the Egress Exam for the Degree in Clinical Chemistry.

### 3. Competences of the graduate profile

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

##### *Instrumental skills:*

8. 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:*

10. To intervene in the face of the challenges of contemporary society at the local and global level with a critical attitude and human, academic and professional commitment to contribute to consolidating general well-being and sustainable development.

##### *Integrative skills:*

14. 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:**

2. 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.
6. To interpret the results of analyses based on established criteria that allow timely and pertinent decision-making in clinical, toxicological, chemical, food, forensic, and environmental diagnosis.
7. To guarantee the reliability of the analytical results obtained by applying quality control guidelines as established by laboratory policies for correct decision-making.

**4. Summative evaluation:**

- Daily evidences
- Oral presentation
- Partial exams
- PIA

**5. Course integrative project/product:**

Oral proposal of an original research project to answer some unknown microbiological aspect in which background, materials and methods are mentioned in detail, as well as possible results obtained.

## 6. References:

- Becerril-Flores, M. (2014). *Parasitología médica* (4th ed.). Mexico DF. MacGraw-Hill.
- Bonifaz Trujillo, J. A. (2018). *Microbiología Médica Básica* (5th ed.). Mexico DF. MacGraw-Hill.
- Collier, L., Kellam, P., & Oxford, J. (2011). *Human virology*. London. Oxford Press.
- Diario Oficial de la Federación. (2005). Norma Oficial Mexicana NOM-052-Semarnat-2005. *Última Reforma Publicada DOF 23-06-2006*.
- Koneman, E. (2017). *Koneman diagnóstico microbiológico: texto y atlas en color*. Buenos Aires. Editorial Médica Panamericana (7th ed.).
- Miller, J. M., Astles, R., Baszler, T., Chapin, K., Carey, R., Garcia, L., ... Centers for Disease Control and Prevention (CDC). (2012). Guidelines for safe work practices in human and animal medical diagnostic laboratories. Recommendations of a CDC-convened, Biosafety Blue Ribbon Panel. *Center for Disease Control and Prevention: Morbidity and Mortality Weekly Report*. <https://doi.org/su6101a1> [pii]
- Murray P, Rosenthal K, P. M. (2017). *Microbiología Médica* (8th ed.). Madrid. Elsevier.
- NOM-087-ECOL-SSA1-2002, P. A.-S. A.-R. P. B.-I.-C. Y. E. D. M. (2003). NORMA OFICIAL MEXICANA NOM-087-ECOL-SSA1-2002, PROTECCIÓN AMBIENTAL - SALUD AMBIENTAL - RESIDUOS PELIGROSOS BIOLÓGICO-INFECCIOSOS - CLASIFICACIÓN Y ESPECIFICACIONES DE MANEJO. *Diario Oficial de La Federación*.
- Salud, O. M. de la. (2008). Manual de bioseguridad en el laboratorio. *Medigraphic.Com*. <https://doi.org/10.1590/S0124-00642005000300007>
- Secretaría de Medio Ambiente y Recursos Naturales. (2003). Nom-087-Semarnat-Ssa1-2002, Protección Ambiental - Salud Ambiental - Residuos Peligrosos Biológico- Infecciosos - Clasificación Y Especificaciones De Manejo. *Diario Oficial de La Federación*.
- US Department of Health and Human Services. (1999). Biosafety in Microbiological and Biomedical Laboratories. *Public Health Service*. <https://doi.org/citeulike-article-id:3658941>

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E-list (E-prints in Library and Information Science: <http://eprints.rclis.org/perl/search/simple>

Google Scholar: <http://scholar.google.com/>

ScienceDirect: <http://www.sciencedirect.com/>

Scopus: <http://www.scopus.com/>