UNIVERSIDAD AUTÓNOMADENUEVO LEÓN
SCHOOL OF MEDICINE
Ba CLINICAL CHEMISTRY

SYNTHETIC PROGRAM.

1.Identification data:	
•Institution	Universidad Autónoma de Nuevo León
•College	Faculty of Medicine
•Education program	Clinical Chemistry
•Learningunit	Organic Analysis
•Total hours of classroom, theory and practice	80
• Frequency in classroom per week	4
•Total extra hours Outside classroom)	10
•Modality	Face-to-face instruction
•Academic period	Fifth semester
•Type of learnigunit	Core
•Curricular area	ACFB
•UANL Credits	3
•Date of elaboration	11/07/2018
•Date of actualization	26/06/2022
•Responsible (s) for the design and	Dr. C. Verónica Mayela Rivas Galindo, Dra. Q. Noemí Waksman Minsky and Dra. Q. Tannya Rocío Ibarra Rivera

actualization	

2.Purpose(s):

The purpose of the Organic Analysis Learning Unit is to contribute to achieving the profile of the graduate through training in the analysis of organic molecules by traditional methods of qualitative analysis, as well as by spectroscopic methods. This course will allow the student to support the generation of knowledge and the resolution of problems in the professional field. In this learning unit, general skills are developed, especially in the preparation of inter, multi and transdisciplinary academic and professional proposals according to the best global practices to promote and consolidate collaborative work, since training is provided in the interpretation of spectroscopic data obtained from equipment used worldwide for structural analysis. Furthermore, the use and management of analytical results, in the resolution of problems that lead to the characterization and structural elucidation of various organic compounds, will allow you to intervene in the challenges of contemporary society locally and globally with a critical attitude and human commitment, academic and professional to contribute to consolidating general well-being and sustainable development. The training received to resolve results interpretation exercises in this field of organic analysis will allow you to resolve personal and social conflicts according to specific techniques in the academic and professional field. The student will acquire specific skills to develop knowledge, skills and abilities for the analysis of organic compounds, from the chemical composition of the matter, as well as its physicochemical properties, which will be used to determine analytes in biological, environmental and food matrices, through the functional organic analysis and modern spectroscopic methods. In addition, the knowledge acquired will allow the making of timely and relevant decisions that can be applied in toxicological diagnosis, chemical analysis of food, forensic and environmental. The learning unit Organic Analysis is located in the fifth semester of the Clinical Chemistry degree; for its development, it requires the knowledge acquired in previous learning units such as Basic Organic Chemistry, Organic Techniques and Biochemistry since it is necessary to know organic compounds, their chemical behavior, nomenclature, as well as the use of some physical and chemical constants of organic compounds. This course has a broad relationship with the Comprehensive Organic Analysis Laboratory, since it provides all the theoretical knowledge necessary for the development of analysis of organic molecules with traditional techniques and spectroscopic methods. In addition, the skill acquired in the analysis of compounds will allow the application in the study and analysis of various biological matrices in the courses of Clinical Biochemistry, Food Analysis, Instrumental Analysis and Toxicology.

3. Competence of the graduate profile

- **General skills contributing to this learning unit**

Instrumental skills:

7. To develop inter, multi and transdisciplinary academic and professional proposals in accordance with the best global practices to promote and consolidate collaborative work.

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 skills of the graduate profile that contributes to the learning unit**

1. To solve problems by applying knowledge of the chemical composition of matter as well as its physicochemical properties to determine analytes in biological, environmental and food matrices.

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.

4. Factors to consider for evaluating the learning unit
• Written evaluations • Combined problem solving • Questionnaires and problems • Comparative tables • Report • Infographic • Questionnaires and problems • Final group report • Course integrative product
5. Course integrative project/product:
Comprehensive evaluation that demonstrates the acquisition of knowledge in qualitative and instrumental techniques for the identification of organic substances and proposal of a chemical structure from chemical and spectroscopic data.
6. Sources of support and consultation (bibliography, hemerography, electronic sources):

Nicolaou, K.C. y Montagnon T. (2008). Molecules that changed the world. EUA: Editorial Wiley-VCH.
Pretsch, E. y Buhlman, P. (2009). Structure determination of organic compounds. USA: Editorial Springer.
Shiner, Hermann, Morrill, Fuson, Curtin. (2013). Identificación Sistemática de Compuestos Orgánicos. México: Editorial Limusa-Wiley.
Silverstein, R. M. (2005). Spectrometric identification of organic compounds. EUA: Editorial Wiley.
Wade, L.G. (2012). Química Orgánica. México: Editorial Pearson.

Suggested websites:

1. Análisis Orgánico Cualitativo. Recuperado el 20 de julio de 2020 de sites google website: https://sites.google.com/site/analisisorganicocualitativo/
2. De Química, Recursos Educativos de Química. Recuperado el 20 de julio de 2020 de dequimica. Website: https://www.dequimica.info/analisis-organico-cualitativo/
3. Biblioteca Farmacéutica, recuperado 24 de julio de 2020. http://www.bibliotecafarmaceutica.com/Enlaces/Aco/Octavo/Documentos/Libro%20Aco-2019.pdf
4. Study.com, Analyzing Organic Compounds: Methods & Tools, recuperado el 24 de julio de 2020. https://study.com/academy/lesson/analyzing-organic-compounds-methods-tools.html
5. Khan academy, Una breve introducción a la química orgánica, recuperado el 26 de julio de 2020. https://es.khanacademy.org/science/organic-chemistry.
6. University of Alberta. Interactive Tutorial of Infrared Spectroscopy. Recuperado el 20 de julio de 2020 de ChemUAlberta.CA. Website: http://www.chem.ualberta.ca/~orglabtutorials/Interactive%20Tutorials/ir/irspec.html
7. Chemistry Libre text. Empirical rules for absortion wavelengths of conjugated systems. Recuperado 24 de julio de 2020. https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Supplemental_Modules_(Organic_Chemistry)/Spectroscopy/Visible_and_Ultraviolet_Spectroscopy/Empirical_Rules_for_Absorption_Wavelengths_of_Conjugated_Systems
8. University of Alberta. Interactive Tutorial of NMR Spectroscopy. Recuperado el 26 de julio de 2020 de ChemUAlberta.CA. Website: http://www.chem.ualberta.ca/~orglabtutorials/Interactive%20Tutorials/hnmr/HNMRmain.html
9. WebSpectra, Recuperado el 26 de julio de 2020 de University of California https://webspectra.chem.ucla.edu//
10. Scai Uma Es, Espectrometría de Masas, recuperado el 24 de julio de 2020. http://www.scai.uma.es/areas/aqcm/ems/ems.htm
11. Video You Tube. Espectrometría Principios Básicos, Recuperado 24 de julio 2020. https://www.youtube.com/watch?v=ztArLXr8oUEl
12. Video You Tube, How2: interpret a Mass Spectrum, 19-Dic-2012. Recuperado 24 de julio 2020 https://www.youtube.com/watch?v=ookUh91aUCQ
13. Interactive Spectroscopy. Ejercicios combinados para resolución de problemas. Recuperado el 26 de julio de 2020 de University of Calgary CA. http://www.chem.ucalgary.ca/courses/351/WebContent/spectroscopy/spectroscopy.html
14. Organic Structure Elucidation, A workbook of unknowns. Recuperado el 26 de julio de 2020 de University of Notre Dame. https://www3.nd.edu/~smithgrp/structure/workbook.html