



UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN  
SCHOOL OF MEDICINE  
Ba CLINICAL CHEMISTRY



**SYNTHETIC PROGRAM.**

<b>1. Identification data:</b>	
• Institution	Universidad Autónoma de Nuevo León
• College	School of Medicine
• Education program	Clinical Chemistry
• Learning unit	Forensic analysis
• Total hours of classroom, theory and practice	60
• Frequency in classroom per week	3 hours
• Total extra hours (Outside classroom)	30
• Modality	Mixed
• Academic period	Sixth, seventh, eighth and ninth semesters
• Type of learning unit	Elective
• Curricular area	ACFP-F
• UANL Credits	3
• Date of elaboration	10/10/2018
• Date of actualization	19/07/2021, 25/07/2022, 30/07/2024
• Responsible (s) for the design and actualization	Dra. C. Magdalena Gómez Silva; Dr. José Alberto Garza Leal; Dr. C. Mario Alberto Hernández O.

## **2.Purpose(s):**

The Learning Unit (LU) of Forensic Analysis aims to develop in the student the skills that allow him to delve into aspects related to forensic toxicology, such as the analysis of different substances associated with violent deaths, accidental, suicidal, or criminal poisoning; this will allow the future graduate to substantiate within a legal framework, the type of samples used, chains of custody, as well as the cutting-edge methodology to give a final diagnosis.

In this LU, the student develops general skills by using traditional and cutting-edge research methods and techniques for the chemical-toxicological analysis of toxic compounds. Likewise, he or she intervenes in the face of society's challenges by issuing, with a critical attitude and human commitment, a diagnosis that contributes to solving the cause of a person's death, being capable of resolving personal and social conflicts by making the appropriate decision by relating the chemical result of the forensic analysis and issuing a final opinion.

During this LU, the student also develops specific skills since he/she is able to solve problems by determining the chemical composition and the presence of different substances associated with violent deaths in different matrices. He/she incorporates new analytical methodology in forensic analysis laboratory processes, which allows him/her to interpret the results based on established criteria and guarantee their reliability by applying quality control guidelines that allow him/her to make a timely and pertinent decision to issue a forensic diagnosis. This learning unit can be located in the eighth or ninth semester. For its development, the student uses the skills acquired in the Analytical Chemistry learning unit by developing and selecting analysis methods for different substances such as Instrumental Analysis by applying the appropriate methodology to perform forensic analysis, Medical Physiology by obtaining knowledge of the normal functioning of organs and tissues and contrasting them with the affected tissues, Pathology by comparing and recognizing the changes that occur in tissues affected by the substances involved and Toxicology and Legal Chemistry, which provides the basic elements of toxicological analysis. Likewise, this LU is essential for the development of professional and social service practices by providing tools applicable in laboratories where forensic analysis tests are developed in the area of forensic medicine.

### 3. Competence of the graduate profile

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

**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 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.

5. To incorporate new analytical methodology that contributes to the functional, economic and/or environmental improvement of laboratory processes to respond to needs in health areas.

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

- Evidences
- Accredited activities
- Laboratory practices
- Course integrative project/product

### 5. Integrative learning Product:

Oral and written presentation of the resolution of a hypothetical forensic toxicology problem that includes the preparation, presentation and discussion of the final report on the Moodle Platform or by email.

## 6. Sources of support and consultation (bibliography, hemerography, electronic sources):

Bello-Gutiérrez, J., López-Cerain, A. (2001). Fundamentos de Ciencia Toxicológica. Madrid España: Ediciones Díaz de Santos, S.A

Flanagan, R.J.; Taylor, A.; Watson, I.D. and Whelton, R. (2007) Fundamentals of Analytical toxicology. UK: John Wiley & Sons.

Fundamentals of analytical toxicology.pdf

<https://drive.google.com/file/d/1hgrQcxfZzwGRKzTDnRkRpVfvwqvJjbGb/view?usp=sharing>

Gisbert-Calabuirg, J.A. (2004) Medicina Legal y Toxicología. (6ª edición) Barcelona España: Masson-Salvat  
Medicina legal y toxicologica.pdf

<https://drive.google.com/file/d/1OKFc7ooh5lwAXiUxySlj5YFh2SkPepd1/view?usp=sharing>

Hernández Ordoñez, M. A. . (2014) .Fundamentos de Medicina Legal . Mexico DF: MC Graw-Hill.

Fundamentos de medicina legal.pdf

<https://drive.google.com/file/d/1jn0Uc1dq0Vs4SGdS76nZE4FG6VKkBly0/view?usp=sharin>

Jickells, S. and Negrusz, A. (2012) Clarke's Analytical Forensic Toxicology, (1<sup>o</sup> ed). Philadelphia: (PhP) Pharmaceutical Press

Clarke\_s Analysis of Drugs and Poisons.pdf

<https://drive.google.com/file/d/1EVMFr8rGpvfd-zO0id-DLN3JHA2aVoWc/view?usp=sharing>

Karch, S. B. MD (2008) .Posmortem Toxicology of Abused Drugs. Washintong DC: CRC Press.

Postmortem Toxicology of Abused Drugs.pdf

<https://drive.google.com/file/d/1a-eNWHjLMCHqnYjDbUZovjjeOmvuLVz/view?usp=sharing>

Klaassen, C. D (2001). Casarett and Doull's toxicology: the basic science of poisons. (6a. ed.). Kansas City: Mc Graw-Hill.

Toxicology the basic science of poisons.pdf

<https://drive.google.com/file/d/1zKJhgZEOPTGATyBHUEo39EuF4ZIToTB/view?usp=sharing>

Levine, B. (2009) Principles of forensic TOXICOLOGIA, (3er Ed.) Washintong DC: AACCPress.

Skoop, G. (5th de june de 2004). GTFCh Guideline for Quality Control in Forensic Toxicological Analyses  
Recommendations for sampling postmortem specimens for forensic toxicological analyses and special aspects of a postmortem toxicology investigation, Appendix D Recuperado el 23 de nov de 2018, de paper Recommendations for sampling (Appendix D).pdf <https://drive.google.com/file/d/1cZPELla1fQpOoxBQwj9FuvP-Y-X33lhm/view?usp=sharin>