

## 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):	General chemistry
Total number of class hours-theory and practice:	160
Class hours per week:	8 hours
Independent study:	50
Course modality:	Face-to-face instruction
Module level:	First semester
Core/elective module:	Core
Curriculum area:	ACFB
UANL credit points:	7
Create date:	May 2 <sup>nd</sup> , 2017
Date of last amendment made:	July 07 <sup>th</sup> , 2024
Person(s) responsible for the design and amendment of the module:	PhD. Rocío Alvarez Román, PhD. David A. Silva Mares

## 2. Purpose:

The purpose of this learning unit (LU) is to develop in the student competencies that will allow him/her to identify inorganic chemical compounds of biochemical importance and to identify their physical and chemical properties. In addition, students will acquire laboratory skills for handling reagents and materials commonly used in chemical laboratories. The above will contribute to develop in the graduate of the QCB degree, the abilities and skills to apply the scientific method and support the generation and application of knowledge in their work field.

It contributes to the development of **general competencies** in that the student will be able to use logical and mathematical language to understand and interpret stoichiometric calculations, preparation and analysis of solutions. Likewise, the student will be committed to respect the working conditions and regulations in classrooms and laboratories to consolidate his own and his classmates' general wellbeing. In addition, through the analysis of the parts and functioning of chemical systems, they will be able to construct innovative proposals to overcome challenges of their interdependent global environment.

During the LU, the student will also develop **specific competencies** in the classroom and laboratory by solving problems applying knowledge of the chemical composition and properties of the main elements and inorganic compounds of biochemical interest, which will be useful for their determination in different matrices. Likewise, by complying with the safety regulations of the department, observing the safety sheets of the reagents and the Official Mexican Standards, the student will develop the competence to handle chemical and biological materials following the official Mexican and/or international standards that guarantee their correct use and disposal to preserve health and the environment.

The learning unit of **General Chemistry** is located in the first semester of the Clinical Chemistry academic program and is linked through the topics taught, with other learning units such as Physicochemistry and Fundamentals of Analytical Chemistry. The knowledge of properties of radiation and matter, as well as the handling of solutions, will help to understand the thermodynamic properties of solutions and the basics of spectroscopy, which are taught in the Physicochemistry learning unit. Likewise, the LU of Fundamentals of Analytical Chemistry, retakes the knowledge of nomenclature, chemical reactions and stoichiometry acquired in this learning unit, in order to perform the calculations of optimal proportions of reagents and yield of reactions that will be seen in the learning unit of Fundamentals of Analytical Chemistry.

### 3. Competences of the graduate profile

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

##### *Instrumental skills:*

2. To use logical, formal, mathematical, iconic, verbal and non-verbal languages according to their stage of life, to understand, interpret and express ideas, feelings, theories and currents of thought with an ecumenical approach.

##### *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:*

12. To make innovative proposals based on a holistic understanding of reality to help overcome the challenges of the interdependent global environment.

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

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.
3. 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.

#### 4. Summative evaluation:

- Daily evidence
- Laboratory reports
- Partial exams
- PIA

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

Proposal of written-practical resolution of cases to interpret and/or predict the physical, chemical and chemical reactivity properties of compounds.

#### 9. References:

- Álvarez-Román, R. (2017) *Guías de clase*. México: UANL.
- Álvarez-Román, R. (2017) *Manual del Laboratorio de Química General*. México: UANL.
- **Brown, T. L.; Lemay E. H. (2013). *Química la Ciencia Central*. México: Ed. Pearson.**
- Chang, R., (2011) *Química*. México: Ed. McGraw Hill.
- Petrucci, R. H., Harwood W. S. (2007) *Química General*. México: Ed. Pearson Prentice Hall.
- Yamil Cordoba . (2017). Enlaces Químicos, clases de enlaces y propiedades periódicas. 01 agosto 2020, de La Química de Yamil Sitio web: <https://youtu.be/C4mZpTEgdio>
- Alberto Balvin. (14 mayo 2015). Estructura de Lewis: definición y ejemplos.. 01 agosto 2020, de 8CIFRAS Sitio web: <https://youtu.be/sXaR91Ve2rg>
- Vladimir Sanchez Gonzaga. (28 septiembre 2017). GEOMETRÍA MOLECULAR SEGÚN TRPECV | Química básica. 01 agosto 2020, de ACADEMIA DE QUÍMICA ONLINE Sitio web: <https://youtu.be/l4QbqQkVL-4>
- Germán Fernández. (7 diciembre 2014). Estructuras de Lewis, geometría y polaridad de NF<sub>3</sub>, PH<sub>3</sub>, SO<sub>3</sub>, CCl<sub>4</sub>, CH<sub>2</sub>Cl<sub>2</sub>, H<sub>2</sub>S, O<sub>2</sub>. 01 agosto 2020, de quimicaorganica.org Sitio web: <https://youtu.be/IY96BAD7ggY>
- KhanAcademy Español. (5 enero 2015). Fuerzas intermoleculares. 01 agosto 2020, de KhanAcademy Sitio web: <https://youtu.be/Rmcm51dcEI4>