



**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                                       | Faculty of Medicine  |
| • Education program                             | Clinical Chemistry   |
| • Learning unit                                 | Genetics   |
| • Total hours of classroom, theory and practice | 40   |
| • Frequency in classroom per week               | 2  |
| • Total extra hours Outside classroom)          | 20   |
| • Modality                                      | Face to face instruction   |
| • Academic period                               | 5th semester   |
| • Type of learning unit                         | Core   |
| • Curricular area                               | ACFP-F   |
| • UANL Credits                                  | 2  |
| • Date of elaboration                           | January 15th, 2017   |
| • Date of actualization                         | July 20th, 2024  |
| • Responsible (s) for the design and            | PhD. Ma. del Roble Velasco Campos<br>PhD. Geovana Calvo Anguiano<br>MD. Luis Daniel Campos Acevedo |

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|---------------|--|
| actualization |  |
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**2.Purpose(s):**

This learning unit aims to contribute to both professional and human formation by promoting the understanding of the conceptual foundations of Genetics. This will enable graduates to substantiate many of the analytical procedures in clinical laboratories, aiding in the diagnosis of genetic or chromosomal disorders, monogenic diseases, complex diseases, and metabolic disorders across different matrices.

Regarding general competencies, students will be able to use their native language effectively in both oral and written forms, with relevance, timeliness, and ethics, adapting their message to the context to convey their ideas when describing genetic foundations and applying new technologies in the laboratory. They will also develop an attitude of commitment and respect towards the diversity of social and cultural practices that affirm the principle of integration while solving integrative research assignments; and achieve the adaptability required in social and professional environments by working in various situations and types of classrooms.

Furthermore, students will review literature in English as a second language, developing language skills from everyday contexts to professional settings in a globalized environment. There is a connection with learning units from previous semesters, such as Cell Biology, where knowledge of cell structure and function is applied; Morphological Sciences, utilizing the foundations of early development and gametogenesis; Pathology, analyzing the origins and genetic factors of diseases; and Biochemistry, applying knowledge of molecular properties. The learning units on Clinical Pathology and Cytogenetic Diagnostic Tools provide a foundation for understanding genetically derived diseases.

### 3. Competence of the graduate profile

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

**Instrumental skills:**

4. 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.

**Personal and social interaction skills:**

9. To maintain an attitude of commitment and respect towards the diversity of social and cultural practices that reaffirm the principle of integration in the local, national and international context in order to promote environments of peaceful coexistence.

**Integrative skills:**

15. To achieve the adaptability required by the uncertain social and professional environments of our time to create better living conditions.

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

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.

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| <b>4. Factors to consider for evaluating the learning unit</b>   |
| <ul style="list-style-type: none"><li>• Questionnaires</li><li>• Infographic</li><li>• Comparative charts</li><li>• Written evaluations</li><li>• Electronic presentation</li><li>• Course integrative project/product</li></ul> |
| <b>5. Course integrative project/product:</b>  |
| Theoretical evaluation of clinical cases of genetic diseases in which the ability to select the appropriate technique is demonstrated and the results of the selected genetic tests are interpreted.                             |
| <b>6. Sources of support and consultation (bibliography, hemerography, electronic sources):</b>  |

Textbooks:

Turnpenny P y Elard S. (2020). Emery's Elements of Medical Genetics and Genomics, 16° edition. México. Editorial Elsevier.

Solari AJ. (2004). Human Genetics. Fundamentals and Applications. 4a edition. México, Editorial Médica Panamericana.

Gersen S.L. Keagle M.B. (2013). The principles of Clinical Cytogenetics. Second edition, Editorial Springer.

Nussbaum, McInnes and Willard (2016). Genetics and Genomics In Medicine, Thompson & Thompson Seventh Edition, Editorial Elsevier.

Tom Strachan & Andrew Read. (2019). Human Molecular Genetics, 15th edition.

Paniagua R. (2017). Cell and Molecular Biology. 4 Edition. España. Editorial Mc Graw Hill

David L. Valle, Stylianos Antonarakis, Andrea Ballabio, Arthur L. Beaudet, Grant A. Mitchell (2019) The Online Metabolic and Molecular Bases of Inherited Disease. United States. Editorial McGraw-Hill

Hereditary diseases: <https://www.ncbi.nlm.nih.gov/omim>