

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):	Research Seminar I
Total number of class hours-theory and practice:	40
Class hours per week:	2 hours
Independent study:	20
Course modality:	Face-to-face instruction
Module level:	Seventh semester
Core/elective module:	Core
Curriculum area:	ACFP-I
UANL credit points:	2
Create date:	October 10th, 2018
Date of last amendment made:	June 07th, 2023
Person(s) responsible for the design	Dr. Sc. Paula Cordero Pérez, Dr. Sc. Diana Patricia Moreno Peña, Dr. Sc. María de Lourdes Garza Rodríguez, Dra. Sc. Liliana Torres González.

2. Presentation:

The "Research Seminar I" unit focuses on developing and defining the set of techniques, methods, and procedures to be followed during the research process for knowledge production. This unit will be carried out in two stages.

In the first stage, students will analyze the introductory fundamentals of research and each of the phases that make up research project protocols.

In the second stage, students will review various research lines offered by the different departments or services of the School of Medicine, allowing those interested in research to consider future involvement in these areas.

Finally, as an Integrative Learning Product (ILP), students will collaboratively create a written proposal on the assigned research topic, including everything from the theoretical framework to conclusions.

3. Purpose:

The purpose of this unit is to contribute to achieving the graduate profile in knowledge and development of scientific research skills within the field of health sciences by creating academic and research proposals in accordance with global best scientific practices to promote and strengthen collaborative work. Students will also be able to apply critical and proactive thinking when selecting and conducting bibliographic research as a team, maintaining a commitment to and respect for their colleagues' opinions and working styles. This will enable them to achieve the adaptability required in the scientific environment to create better advances of the research to be developed.

Additionally, this unit develops specific competencies by incorporating new analytical methodologies during the research process that enhance the functional, economic, and environmental aspects of laboratory processes to address needs in health areas.

The "Research Seminar I" unit is situated in the seventh semester of the Clinical Chemistry degree program and utilizes competencies acquired in the Learning Units of Biostatistics for sample size calculation, mean, and standard deviation of the variables to be analyzed. It also builds on knowledge from Analytical chemistry, Organic chemistry, Basic microbiology, and Clinical biochemistry, applying skills such as solution preparation, analytical validation, and the diagnosis of key pathogenic microorganisms through biochemical and molecular markers.

Furthermore, "Research Seminar I" encourages students to analyze, interpret, and discuss results based on scientific articles, theses, or research projects, providing a foundation for "Research Seminar II" and essential bases for the development of social service and professional practice in the field of health sciences research.

4. Competences of the graduate profile:

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

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:

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.

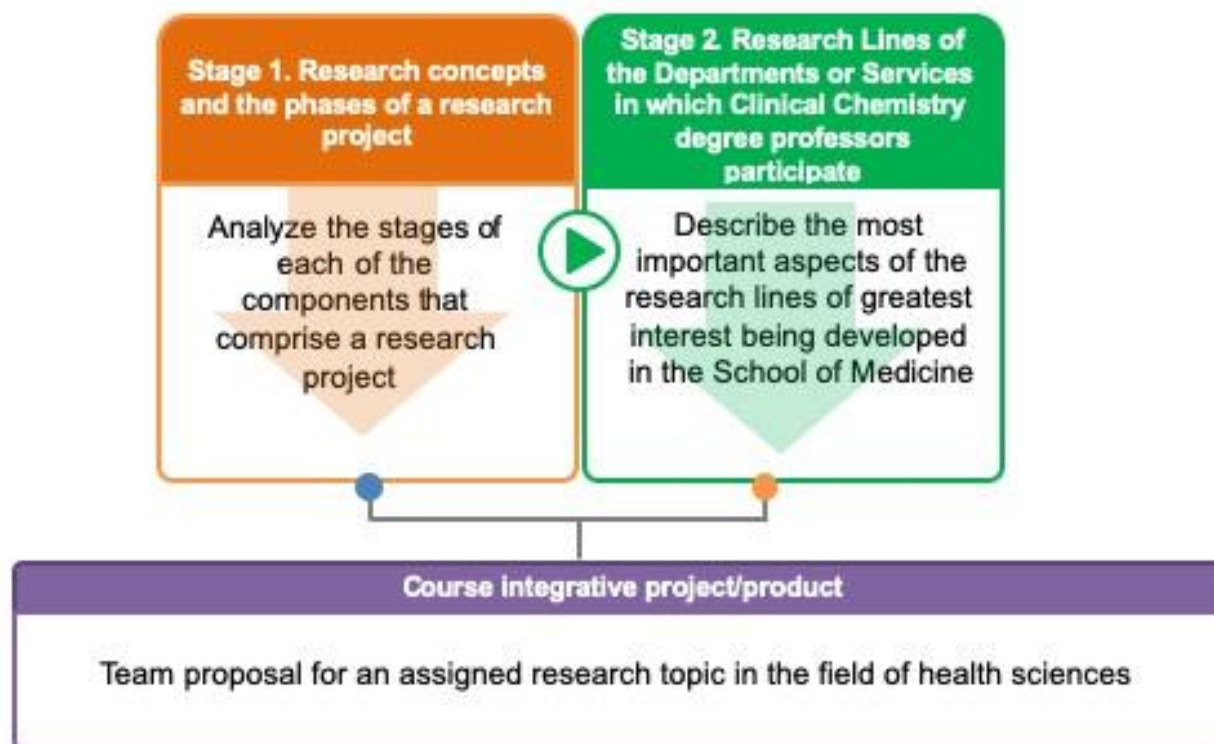
Integrative skills:

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

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

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.

5. Graphic representation:



6. Structuring into stages or phases:

Stage 1: Research concept and phases of a research project.

Component(s) of the competence: Analyze the basic concepts used in the development of a scientific research project, including its component parts, to facilitate the development of research projects that respond to needs in health areas.

Evidence of student learning	Performance criteria	Learning activities	Content	Resources
Evidence 1. Written theoretical evaluation on the concept of research, as well as the parts that make up a research project	<p>For the evaluation, the student: Describes the research concept, as well as the parts that make up a project: Title, Summary, Introduction, material and methods, results, discussion and conclusions.</p> <p>Answers the evaluation individually and in writing.</p> <p>Develops it in a period of 1 hour.</p>	<p>The professor, with the support of a PowerPoint presentation, gives a general presentation of the UA and explains the concepts related to the content section according to the schedule programmed for each of the topics, which is sent to the students in advance through the Faculty of Medicine platform.</p> <p>The student reads outside the classroom on the topics referred to in the content section according to the scheduled calendar.</p>	<p>Introduction -Materials and Methods -Results -Discussion -Conclusions -Bibliography</p> <p>1.2 Stages of the research Problem statement Functions of the theoretical framework -The analytical review of the corresponding literature. -The construction of the theoretical framework, which may imply the adoption of a theory.</p> <p>-Objectives pursued by the research</p>	<p>Computer with Microsoft Office and Internet connection</p> <p>Electronic platform for the Faculty of Medicine</p> <p>Microsoft Teams and Microsoft Forms platforms</p> <p>Other freely accessible digital media</p> <p>Bibliography -Arias Fidiás G. 2006</p>

		<p>The student presents the assigned topic as a team with the support of a Power Point presentation (Weighted Activity 1.1).</p> <p>The student individually participates in the face-to-face sessions actively analyzing the content reviewed in the sessions.</p> <p>The student answers the questions interspersed during the presentations about the assigned topics.</p> <p>The student prepares an essay on each topic presented in class by the corresponding team, including that of his/her own team, establishing a discussion forum. He/she develops it in a team of maximum 5 members adjusting to the rubric, delivers it as an electronic document and uploads it to the Faculty of Medicine platform in the established time (Weighted Activity 1.2-1.10).</p> <p>Weighted activities:</p> <p>1.2 Theoretical framework</p> <p>1.3 Objectives</p> <p>1.4 Justification</p> <p>1.5 Hypothesis</p> <p>1.6 Sampling</p> <p>1.7 Research design</p> <p>1.8 Data analysis</p> <p>1.9 Discussion and conclusions</p>	<p>-Objectives pursued by the research</p> <p>Purposes, objectives and goals of the research</p> <p>-General objectives</p> <p>Specific objectives</p> <p>-Methodological objectives</p> <p>Hypothesis formulation</p> <p>-Research</p> <p>-Null</p> <p>-Alternatives</p> <p>-Statistics</p> <p>Types and identification of variables</p> <p>-Continuous variable</p> <p>-Discrete variable</p> <p>-Independent variable</p> <p>-Dependent variable</p> <p>Sampling</p> <p>Sample and Population</p> <p>Probabilistic Sampling</p> <p>-Simple random sample</p> <p>-Stratified sample</p> <p>-Cluster sample</p> <p>-Quota sampling.</p> <p>-Intentional sampling.</p> <p>-Mixed sampling</p> <p>Non-probabilistic sampling</p> <p>Research design.</p> <p>-Experimental</p> <p>a) Pre-experiments</p> <p>b) Quasi-experiments</p> <p>c) "Pure" experiments</p> <p>-Non-experimental</p> <p>a) longitudinal</p> <p>b) cross-sectional</p>	<p>-Behar Rivero Daniel 2008</p> <p>-Gómez Bastar Sergio, 2012</p> <p>-Hernández Sampieri, Roberto, 2014.</p> <p>-Quintana Tejera, Luis, 2007.</p> <p>-Rojas Soriano, Raúl, 2007.</p> <p>-Tamayo y Tamayo, Mario, 2009.</p>
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		<p>1.10 Bibliographic references The student answers a quiz with a maximum of 5 questions at the end of each of the topics (Weighted activity 1.11-1.19)</p> <p>Weighted activities: 1.11 Theoretical framework 1.12 Objectives 1.13 Justification 1.14 Hypothesis 1.15 Sampling 1.16 Research design 1.17 Data analysis 1.18 Discussion and conclusions 1.19 Bibliographic references</p>	<p>Data analysis -Quantitative -Qualitative -Parametric -Non-Parametric Procedure to quantitatively analyze the data - Select a statistical analysis program on the computer - Run the program (SPSS, Minitab, Stats, SAS or other equivalent.)</p> <p>Discussion and Conclusions</p> <p>Document review process (Bibliographic references)</p>	
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Stage 2: Research Lines of the Departments or Services in which Clinical Chemistry professors participate

Component(s) of the competence: Describe the various lines of research of the Departments or Services of the Faculty of Medicine to develop a possible proposal for a research project that could be carried out in later stages of their training.

Evidence of student learning	Performance criteria	Learning activities	Content	Resources
Evidence 2. Essay on two of the lines of research that most interested you in the Departments or Services of the Faculty of Medicine in which Clinical Chemistry s participate.	<p>- The student writes an essay on the two lines of research that most interested him/her.</p> <p>He/she develops it individually, adjusting to the checklist provided by the professor.</p> <p>He/she prepares it as an electronic document and uploads it to the Faculty of Medicine platform within the established time.</p>	<p>-For this stage, the UA professor invites Clinical Chemistry bachelor's degree professors who conduct research in one of the training areas included in the educational program to participate.</p> <p>- The guest professor-researcher explains his lines of research, the products obtained to date from them (articles, theses, patents, etc.) and his proposals for projects to be carried out that require the participation of bachelor's degree students.</p> <p>-The student listens to this information and communicates more closely outside the classroom with the professor-researcher whose line of research was of interest to him and develops an essay using infographics.</p> <p>The student answers a quiz with a maximum of 5 questions on the lines of research covered in each session. Weighted activity (2.1-.10)</p>	<p>- Research Lines of the Departments or Services in which Clinical Chemistry professors participate</p>	<p>-Classroom with audiovisual media: projector, computer</p> <p>-Electronic platform for the Faculty of Medicine,</p> <p>-MS Teams platform</p> <p>-MS Forms platform</p> <p>-Video file. Define your line of research https://www.youtube.com/watch?v=TP7J3FW2pRg</p>

7. Summative evaluation:

Evidences

1	Written theoretical evaluation on the research concept, as well as the phases that make up a research project	25%
2	Essay on two of the lines of research of the Departments or Services of the Faculty of Medicine in which Clinical Chemistry professors participate that interested you the most.	20%

Weighted Activities

1.1	Presentation of the assigned topic of the phases of a research project with the support of a Power Point presentation as a team	7%
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Essays on the concepts of:

1.2	Theoretical framework	1%
1.3	Objectives	1%
1.4	Justification	1%
1.5	Hypothesis	1%
1.6	Sampling	1%
1.7	Research design	1%
1.8	Data analysis	1%

1.9	Discussion and conclusions	1%
1.10	Bibliographical references	1%
Quiz of the concepts of:		
1.11	Theoretical framework	1%
1.12	Objectives	1%
1.13	Justification	1%
1.14	Hypothesis	1%
1.15	Sampling	1%
1.16	Research design	1%
1.17	Data analysis	1%
1.18	Discussion and conclusions	1%
1.19	Bibliographic references	1%
Research lines quiz		
2.1	Quiz session 1 of lines of research	0.5%
2.2	Quiz session 2 of lines of research	0.5%
2.3	Quiz session 3 of lines of research	0.5%
2.4	Quiz session 4 of lines of research	0.5%
2.5	Quiz session 5 of lines of research	0.5%
2.6	Quiz session 6 of lines of research	0.5%

2.7	Quiz session 7 of lines of research	0.5%
2.8	Quiz session 8 of lines of research	0.5%
2.9	Quiz session 9 of lines of research	0.5%
2.10	Quiz session 10 of lines of research	0.5%
	Integrating learning product	25%
	Summation	100%

8. Course integrative project/product:

Written proposal by the team on the assigned topic of a research project in the area of health sciences that includes everything from the theoretical framework to conclusions.

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FACULTAD DE MEDICINA
PROGRAMA ANALÍTICO

9. References:

Arias Fideas G. *El Proyecto de Investigación, Introducción a la metodología científica*. (2006), Venezuela: EPISTEME, C.A. Recuperado de: <https://ebevidencia.com/wp-content/uploads/2014/12/EL-PROYECTO-DE-INVESTIGACION-C3%93N-6ta-Ed.-FIDIAS-G.-ARIAS.pdf>

Behar Rivero Daniel Salomón. *Introducción a la Metodología de la Investigación*, (2008). Cuba: Shalom. Recuperado de: <http://rdigital.unicv.edu.cv/bitstream/123456789/106/3/Libro%20metodologia%20investigacion%20este.pdf>

Gomez Bastar Sergio. *Metodología de la investigación* (2012) , México: Red Tercer Milenio. Recuperado de: http://www.aliat.org.mx/BibliotecasDigitales/Axiologicas/Metodologia_de_la_investigacion.pdf

Sampieri, Roberto. *Metodología de la investigación*. (2014) Ciudad de México, México. Recuperado de: <http://observatorio.epacartagena.gov.co/wp-content/uploads/2017/08/metodologia-de-la-investigacion-sexta-edicion.compressed.pdf>

Rojas Soriano, Raúl. *El proceso de investigación científica*, (2007) México: Trillas. Recuperado de: <https://raulrojassoriano.com/cuallitlanezi/wp-content/themes/raulrojassoriano/assets/libros/proceso-investigacion-cientifica-5-7-27-03-2014.pdf>

Tamayo y Tamayo, Mario (2009) *El proceso de la investigación científica*, México: Limusa. Recuperado de: <https://es.slideshare.net/sarathrusta/el-proceso-de-investigacion-cientifica-mario-tamayo-y-tamayo1>

Quintana Tejera, Luis (2007) *Métodos y técnicas de investigación 1*, México: McGraw-Hill. Paginas WEB

Archivo de vídeo. Define tu línea de investigación. <https://www.youtube.com/watch?v=TP7J3FW2pRg>