Basic Sciences

Division

Department of Chemistry

Follow up Modular Workshop II

CUCEI

UNIVERSIDAD DE GUADALAJARA
CENTRO UNIVERSITARIO DE CIENCIAS EXACTAS E INGENIERÍAS

1.- GENERAL INFORMATION				
Learning unit Modular Follow up Workshop II		**Department** Chemistry		**Format** Lecture
Prerequisites(P) Modular Follow up Workshop I	**Corequisites (CO)** None	**Ascribed academy** Chemistry	**Module:** M2 Synthesis, purification, chemical transformation.	
Type Modular project	**Lecture hours** 2 h per week	**Practice hours** 0 h	**Total hours** 34h	**Credits** 2
Degrees in which this class is taught: B.S in Chemistry.				

2.- GENERIC COMPETENCIES

Students…
- Interpret and explain the phenomena of their reality from scientific methodology.
- Search and classify the different types of research in the scientific and technological field inside and outside school.
- Presents a research draft related to the area of chemistry.
- Develop protocol elements on a structured document.
- Present the research protocol orally and in writing.

Specific competencies:
-Synthesis, abstraction and analysis.
-Computer and communication skills
-Problem identification
-research abilities
-Application of knowledge to practical knowledge
-Oral and written production
-Team work
-Critical approach to self and others
-Ethical commitment.

3.- SPECIFIC CHARACTERISTICS OF THE COMPETENCIES	
Knowledge	Students: ▪ Understand the importance of criteria and elements that make up successful research. ▪ Have a critical view on the choosing of a research method. ▪ Have a general scope of the different research methods. ▪ Know about the relationships between a research topic, its theory and the possible solution method to use.

	▪ Are able to design a research proposal with enough background support in order to be approved.
Skills	• Apply research strategies to propose solutions to problems. • Identify, contextualize and propose real solutions and well supported to problems detected in the professional field. • Present the research projects they carry out both in writing and orally. • Find and retrieve the required literature in order to do their research project. • Systematize the scientific bibliographic information related to their research project.
Aptitudes	• …identify and solve problems through the formulation of hypotheses and the application of the necessary principles in an analytical and synthetic way. • … relate different knowledge of different fields and apply it in professional and ordinary situations. • …develop study habits and manage their own learning. • …find solutions to specific theoretical or practical problems where they apply the knowledge they learned.
Values	…develop and exercise values such as responsibility, honesty, tolerance, respect, solidarity, willingness and positive attitude towards individual and group work..

4.- TRANSVERSAL COMPETENCIES

☑	Foreign Language (English)
☑	Critical, analytical and synthetic thinking.
☑	Oral and written expression
☑	Professional ethics
☐	Administration of human and material resources
☑	Leadership and sustainability
☑	Creativity, innovation and entrepreneurship
☑	Other

5.- COURSE CONTENT OF THE LEARNING UNIT

1. Types of investigation
2. Spreading of knowledge
3. Scientific research project

6.- ASSESSMENT

☑	Numeric grade

7.- GRADING CRITERIA OF THE LEARNING UNIT	
Indicator of evaluation	**Percentage**
Departmental exams	0
Partial exam	0
Homework	40
Research activities	10
Practice reports	40
Class participation	10
Investigation Project	0

8.- REQUIRED MATERIAL (for students)	
☐	Logbook
☑	Articles and research report

9.-SPECIFIC CONTENT BY LEARNING UNITS						
Content unit	**Generic competency of the content unit**	**Topics**	**Class hours**	**Professor activities**	**Student activities**	**Bibliography**
Unit 1. Types of investigation	Students search and classify the different types of research in the scientific and technologic field.	1.1 Historical	0.5	Professor… … guides the students into the subject by brainstorming the concepts of science and knowledge. …teaches and defines the concepts of science and its classification. Teaches the different types of knowledge. Guides students to apply the acquired knowledge a tool	Students… -Play an essential role by finding information and discussing the different concepts stated by the professor. Respond exercises and do homework of the content unit.	García De Alba, Pompeya. (2000). *Metodología de la Investigación.* México: Porrúa.
		1.2 Descriptive	0.5			
		1.3 Experimental	0.5			

		1.4 Other types of investigation	0.5	to solve problems in different areas		
Unit 2. Knowledge spreading	Students develop reading comprehension abilities and management abilities to look for scientific bibliographic information.	1.1 Ranking of scientific institutions.	0.5	Professor… -Teaches the concepts and definitions of the spreading of knowledge. -Visits the labs where the research is taking place. -Designs and assigns homework that promote feedback of the topics seen in class.	Students… -Do homework of the unit concepts. -Play an essential role by finding information and discussing the information assigned by the professor. -Present their research proposal and discuss about it.	*Metodología de la Investigación. El proceso y sus etapas*. México: Limusa Websites retrieved from: http://www.conacyt.gob.mx/index.php/el-conacyt/sistema-nacional-de-investigadores http://www.scimagojr.com/journalrank.php
		1.2 ISI & IRC	0.5			
		1.3 Impact factor	0.5			

		1.4 National System of Researchers	0.5			
Unit 3. Scientific research project	Students are able to identify, state, and solve problems. Students develop reading comprehension abilities and management abilities to look for scientific bibliographic information. Students present their research projects orally and in writing.	3.1 The process of scientific investigation	7	Professor… -Teaches the concepts and components of a research protocol. -Guides students to design their research topic by applying the knowledge seen in class. -Designs and assigns homework that promote feedback of the topics seen in class	Students… -Play an essential role by finding information and discussing the different concepts stated by the professor -Do homework of the unit concepts. -Solve some exercises on the topic. -Search, organize, and synthesize information in order to present their research topic in a structured way.	Schmelkes, Corina. (2004). *Manual para la Presentación de Anteproyectos e Informes de Investigación (Tesis*). Oxford. Taborga, H. (1982). *Cómo hacer una tesis*. Mexico: Grijalbo. Tramullas, J. S. *Tendencias de Investigación en Documentación,* Madrid, Spain: Librería General.
		3.2 Approaches to investigation (quantitative vs qualitative).	3			
		3.3 The structure for draft of the thesis	10			
		3.4 The research project.	10			

COURSE EVIDENCE
(Deliverables)

- **Project presentation file**
- **Investigation article about their projects.**
- **Final research project**

10.-PROFESSOR'S PROFILE

Professionals in the different fields of chemistry, with experience in developing research projects and using electronic databases to search for bibliographic information. Knowledge of didactic methodologies.

11.-AUTHOR OF THE LEARNING UNIT

Fernando Vega Bautista.
Edgar Benjamín Figueroa Ochoa.
Gilberto Velázquez Juárez.

12.-MODIFICATION AND UPDATE

October, 27 2016