



Universidad Nacional de Ingeniería (UNI)

Escuela Profesional de
Ciencia de la Computación
Sílabo 2024-II

1. CURSO

CH101FCCS. Chemistry I (Mandatory)

2. INFORMACIÓN GENERAL

2.1 Curso	: CH101FCCS. Chemistry I
2.2 Semestre	: 1 st Semester.
2.3 Créditos	: 3
2.4 horas	: 2 HT; 2 HP;
2.5 Duración del periodo	: 16 semanas
2.6 Condición	: Mandatory
2.7 Modalidad de aprendizaje	: Face to face
2.8 Prerrequisitos	: None

3. PROFESORES

Atención previa coordinación con el profesor

4. INTRODUCCIÓN AL CURSO

Chemistry provides a foundation for understanding the composition, structure, and properties of matter. While not directly related to many aspects of programming, chemistry is relevant to computer science in areas such as materials science (developing new materials for computer components), nanotechnology, and bioinformatics. This course introduces the basic principles of general chemistry.

5. OBJETIVOS

- Understand the structure of matter at the atomic and molecular level.
- Apply the principles of stoichiometry to perform chemical calculations.
- Understand the different types of chemical bonds and their influence on the properties of substances.

6. RESULTADOS DEL ESTUDIANTE

- 1) Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions. (Assessment)
- 6) Apply computer science theory and software development fundamentals to produce computing-based solutions. (Assessment)

AG-C07) Computing Knowledge: Applies appropriate knowledge of mathematics, science, and computing. (Assessment)

AG-C09) Solution Design and Development: Designs, implements, and evaluates solutions for complex computing problems. (Usage)

AG-C12) Applies computer science theory and software development fundamentals to produce computer-based solutions. (Usage)

7. TEMAS

Unidad 1: Introduction to Chemistry (6 horas)	
Resultados esperados: 1,AG-C07	
Temas	Objetivos de Aprendizaje (<i>Learning Outcomes</i>)
• Matter and energy. • The scientific method. • Units of measurement. • Classification of matter.	• Describe the properties of matter and energy. [Familiarizarse] • Apply the scientific method to solve chemical problems. [Usar] • Perform unit conversions. [Evaluar]
Lecturas : [BrownLeMayBursten2017], [CG16]	

Unidad 2: Atomic Structure (8 horas)	
Resultados esperados: 1,AG-C07	
Temas	Objetivos de Aprendizaje (<i>Learning Outcomes</i>)
• Structure of the atom. • Atomic number, mass number, and isotopes. • Quantum model of the atom. • Electron configuration.	• Describe the structure of the atom. [Familiarizarse] • Determine the electron configuration of an atom. [Usar] • Relate electron configuration to chemical properties. [Evaluar]
Lecturas : [BrownLeMayBursten2017], [CG16]	

Unidad 3: Chemical Bonds (8 horas)	
Resultados esperados: 1,AG-C07	
Temas	Objetivos de Aprendizaje (<i>Learning Outcomes</i>)
• Ionic bonds. • Covalent bonds. • Metallic bonds. • Molecular geometry.	• Describe the different types of chemical bonds. [Familiarizarse] • Predict the molecular geometry of a molecule. [Usar] • Relate the type of bond to the properties of substances. [Evaluar]
Lecturas : [BrownLeMayBursten2017], [CG16]	

Unidad 4: Stoichiometry (8 horas)	
Resultados esperados: 1,AG-C07,AG-C09	
Temas	Objetivos de Aprendizaje (<i>Learning Outcomes</i>)
• Molar mass and mole. • Chemical reactions and chemical equations. • Stoichiometric calculations. • Limiting reactant and percent yield.	• Calculate the molar mass of a compound. [Familiarizarse] • Balance chemical equations. [Usar] • Perform stoichiometric calculations to determine the amount of reactants and products. [Evaluar]
Lecturas : [BrownLeMayBursten2017], [CG16]	

Unidad 5: States of Matter (8 horas)	
Resultados esperados: 1,AG-C07	
Temas	Objetivos de Aprendizaje (<i>Learning Outcomes</i>)
• Gases. • Liquids. • Solids. • Changes of state.	• Describe the properties of the different states of matter. [Familiarizarse] • Explain changes of state and phase diagrams. [Usar] • Apply the ideal gas laws. [Evaluar]
Lecturas : [BrownLeMayBursten2017], [CG16]	

Unidad 6: Chemistry and Computing (10 horas)	
Resultados esperados: 1,AG-C07,AG-C12	
Temas	Objetivos de Aprendizaje (<i>Learning Outcomes</i>)
• Molecular modeling. • Chemical simulations. • Materials science in computing.	• Describe how chemistry is used in molecular modeling. [Familiarizarse] • Explain the role of chemistry in chemical simulations. [Usar] • Analyze the importance of chemistry in materials science for computing. [Evaluar]
Lecturas : [BrownLeMayBursten2017]	

8. PLAN DE TRABAJO

8.1 Metodología

Se fomenta la participación individual y en equipo para exponer sus ideas, motivándolos con puntos adicionales en las diferentes etapas de la evaluación del curso.

8.2 Sesiones Teóricas

Las sesiones de teoría se llevan a cabo en clases magistrales donde se realizarán actividades que propicien un aprendizaje activo, con dinámicas que permitan a los estudiantes interiorizar los conceptos.

8.3 Sesiones Prácticas

Las sesiones prácticas se llevan en clase donde se desarrollan una serie de ejercicios y/o conceptos prácticos mediante planteamiento de problemas, la resolución de problemas, ejercicios puntuales y/o en contextos aplicativos.

9. SISTEMA DE EVALUACIÓN

***** EVALUATION MISSING *****

10. BIBLIOGRAFÍA BÁSICA

[CG16] Raymond Chang and Kenneth A. Goldsby. *Chemistry*. McGraw-Hill Education, 2016.