uc3m | Universidad Carlos III de Madrid
Carlos III International School

COURSE: INTRODUCTION TO CHEMISTRY		
INTERNATIONAL FOUNDATION PROGRAM	**YEAR: 2018-2019**	**TERM: 2º**

WEEKLY PLANNING								
WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION	WEEKLY PROGRAMMING FOR STUDENT		
			Lectures	Seminars		Description	Class hours	Homework hours
1	1	PRESENTATION OF THE COURSE TOPIC 1. STRUCTURE OF MATTER	X			Introduction to the Course. Course structure and Evaluation. Atomic Structure. Atomic magnitudes: Atomic and Mass Number. Electronic structure. Electronic distribution in energy levels: Quantum numbers. Electronic Configurations.	1,66	2,5
	2	TOPIC 1. STRUCTURE OF MATTER TOPIC 2. CHEMICAL BONDING	X			Organization of the elements in the Periodic Table. Periodic Properties. Definition of Ionic, Covalent, and Metallic Bonding. Lewis Structures. Molecular Geometry: Valence-Shell Electron-Pair Repulsion Theory. Polarity of the Molecules.	1,66	2,5
	3	TOPIC 2. CHEMICAL BONDING	X			Valence Bond Theory. Hybridization of Atomic Orbitals (sp, sp2, sp3). Intermolecular Forces	1,66	2,5

2	4	TOPIC 3. BASIC CONCEPTS. MIXTURES AND SOLUTIONS. CHEMICAL REACTIONS	X			Mole Concept. Relationship between Mass, Mole, Number of atoms, Molecules, and Ions. Ways of expressing the Concentration of a Solution. Preparation of a Solution. Chemical Equations. Balancing Chemical Equations. Stoichiometric Calculations: Reactants, Products, Wealth, and Yields. Limitant Reactant in a Chemical Reaction.	1,66	2,5
3	5	TOPIC 4. THERMOCHEMISTRY	X			Definition and relationship between the State Functions; Enthalpy (H), Entropy (S), and Gibb's Free Energy (G). Enthalpies of Formation, Reaction and Bond. Hess' Law.	1,66	2,5
	6	TOPIC 4. CHEMICAL EQUILIBRIA	X			**FIRST TEST: Topics 1-3** Characteristics of Reversible Chemical Processes. Equilibrium Concept and Equilibrium Constant (K). Determination of the different Equilibrium Constant Expressions (Kc y Kp) for Homogeneous and Heterogeneous Equilibria. Determination of the relationship between Equilibrium Constants and Thermodynamic Parameters.	1,66	2,5
4	7	TOPIC 4. CHEMICAL EQUILIBRIA TOPIC 5. ACID-BASE EQUILIBRIA	X			Factors affecting Equilibrium State: Le Chatelier's Principle. Definition of Acids and Bases. Description of Dissociation Reaction of strong and weak acids and bases. Acid-Base Titration. Determination of Acid and Base Ionization Constants (Ka and Kb). Determination of pH.	1,66	2,5
	8	TOPIC 5. ACID-BASE EQUILIBRIA TOPIC 6: ELECTROCHEMISTRY	X			Neutralization. Salt Hydrolysis. Buffer solutions. Oxidation-Reduction Concept.	1,66	2,5
5	9	TOPIC 6: ELECTROCHEMISTRY	X			Balancing Redox Reactions by Ion-Electron Method in Acidic and Basic Media. Standard Reduction Potential. Electrolysis	1,66	2,5

	10	REVIEW	X			**SECOND TEST: Topics 4-6** Review all Topics	1,66	2,5
						Subtotal	16,6	25
						TOTAL 1	**41,6**	
8		Tutorials, handing in, etc					2	
9		Assesment						
10								
11							2	5
						Subtotal	4	5
						TOTAL 2	**9**	
						TOTAL	**50,6**	