

COLLEGE OF **SCIENCES**





Aldehydes & Ketones
108

1-Butanol

Reagent

CHEMISTRY DEPARTMENT

Chemistry Laboratories

Lab Name	Location	Person in Charge	Programs Served	Courses Served
General Chemistry Lab	- W12-236 - M12-025 - M12-031	- Kifah Al-Taqaz - Mussab Osama Hassan - Amin Hasan	- Chemistry Dept. - College of Engineering	General Chemistry (I) Lab
General Chemistry Lab	W12-240	Reem Alteneiji	Chemistry Dept.	General Chemistry (II) Lab
Analytical Chemistry Lab	M12-034	Mohamed Al-Farouq	Chemistry Dept.	Analytical Chemistry
Organic Chemistry Lab	W12-235	- Amin Hasan - Alaa Bihi	Chemistry Dept.	Organic Chemistry (I) Lab
Organic Chemistry Lab	W12-235	- Amin Hasan - Alaa Bihi	Chemistry Dept.	Organic Chemistry (II) Lab
Organic Chemistry Lab	W12-235	Hajar Ibrahim	Chemistry Dept.	Identification of Organic Compounds
Physical, Inorganic Chemistry lab	W12-239	- Nemat Dek AlBab - Alaa Bihi	Chemistry Dept.	Instrumental Analysis
Physical, Inorganic Chemistry lab	W12-239	Kifah Al Taqaz	Chemistry Dept.	Inorganic Chemistry Lab
General Chemistry Lab	- M12-029 - M12-031	- Hajar Ibrahim - Amin Hasan	- College of Medicine - College of Dentistry	General Chemistry Lab for Medical Sciences Students
Physical, Inorganic Chemistry lab	W12-239	Hajar Ibrahim	Chemistry Dept.	Physical Chemistry (I) Lab
Physical, Inorganic Chemistry lab	W12-239	Kifah Al Taqaz	Chemistry Dept.	Physical Chemistry (II) Lab
Instrumental Analysis Lab	W12-231D	Nemat Dak El-Bab	Chemistry Dept.	- Chemistry Senior Project - Instrumental Analysis - Identification of Organic Compounds - Organic Chemistry 2
General Chemistry	- W12-240 - M12-031 - M12-029	- Reem Alteneiji - Amin Hasan - Alaa Bihi	- Biotechnology Dept. - College of Health Sciences	General Chemistry Lab for HS
Organic Chemistry Lab	- W12-235 - M12-029	- Amin Hasan - Hajar Ibrahim	- Biotechnology Dept. - College of Health Sciences	Organic Chemistry for HS
Analytical Chemistry Lab	M12-034	Mohamed Alfarouq	Biotechnology Dept.	Analytical Chemistry for HS

Lab Name	Location	Person in Charge	Programs Served	Courses Served
Chemistry Students Research – Lab 1	W12-231	<ul style="list-style-type: none"> - Prof. Raed Al Qawasmeh - Prof. Ideisan Abu-Abdoun - Dr. Mohamed El-Naggar 	Chemistry Dept.	Chemistry Senior Project
Chemistry Student Research – Lab 2	W12-232	<ul style="list-style-type: none"> - Prof. Monther Khanfar - Prof. Abdelnasser Metwally - Dr. Ayssar Nahle - Dr. Ahmed Al-Mahdi - Dr. Abdelaziz Elgamouz - Dr. Kamrul Hassan 	Chemistry Dept.	Chemistry Senior Project

Chemistry Lab Staff

#	Name	Title	Ext.	Email
1	Nemat Dek Al Bab	Team Leader	065053477	naimat@sharjah.ac.ae
2	Mohamed Al Farooq	Sr. Lab Officer	065052470	malfarouk@sharjah.ac.ae
3	Kifah Al-Taqaz	Sr. Lab Officer	065053475	kifah@sharjah.ac.ae
4	Hajar Ibrahim	Lab Officer	065053441	habdalla@sharjah.ac.ae
5	Reem Alteneiji	Lab Officer	065053445	ralteneiji@sharjah.ac.ae
6	Amin Hasan Botmah	Lab Officer	065053470	abotmah@sharjah.ac.ae
7	Alaa Bihi	Lab Officer	065053423	abihi@sharjah.ac.ae
8	Ali Hussam Al-Samarrai	Lab Technician	065052477	aalsamarrai@sharjah.ac.ae

GENERAL CHEMISTRY (I) LABORATORY



Location	Lab Staff in Charge	Contacts
W12-236	Kifah Al-Taqaz	065053475
M12-025	Mussab Osama Hassan	065052477
M12-031	Amin Hasan	065053470

INTRODUCTION

This Laboratory is designed to teach students at the College of Engineering and College of Sciences the basic qualitative and quantitative aspects of General Chemistry.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Heating and Cooling Systems
- Ovens
- Centrifuges

EXPERIMENTS

- The Scientific Methods: Measurements and Significant Figures
- Determination of the Density of Liquids and Solids
- Melting Point and Boiling Point
- Separation of a Mixture
- Composition of Hydrated Salt
- Heat of Reaction
- Determination of the Gas Constant R
- Qualitative Analysis of Anions
- Qualitative Analysis of Cations
- Paper Chromatography
- Acid Base Titration

TESTS AND SERVICES

- Determining the Density of Solids & Liquids
- Determining the Melting & Boiling Point
- Qualitative Determination of Anions and Cations

GENERAL CHEMISTRY (II) LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 240	Reem Alteneiji	065053445

INTRODUCTION

This Laboratory course is designed to teach various practical methods such as spectrophotometric methods, PH measurements, titration methods, thermodynamics, and kinetics.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Heating and Cooling Systems
- Different Ions Selective Electrodes
- Conductometers
- Ovens
- PH Meters
- Spectrophotometer

EXPERIMENTS

- Molecular Geometry and Bonding
- Colligative Properties- Freezing point Depression
- Factors affecting Reaction Rate-Concentration and Temperature
- Determination Rate of Reaction and the order of the reaction
- Hydrolysis pH meter, Buffers
- Vinegar Analysis
- Acids, Bases and Neutralization Reactions-Antacid Analysis.
- Determination of an Equilibrium Constant
- Solubility (Solutions and Concentrations- Determining the Solubility Rules of Ionic Compounds) Chemical Quantities and Aqueous Reactions - Solution Concentration and Dilution
- Solubility Product of Lead Iodide
- Electrolytic Cells, Galvanic Cells and the Nernst Equation

TESTS AND SERVICES

- Titration Methods

ANALYTICAL CHEMISTRY LABORATORY



Location	Lab Staff in Charge	Contacts
M12- 034	Mohamed Al-Farouq	065052470

INTRODUCTION

This Laboratory introduces students to the concepts of basic Practical Analytical Chemistry and develops advanced laboratory skills in Analytical Chemistry. Students learn the standard methods of volumetric and gravimetric analysis.

EQUIPMENT AND INSTRUMENTS

- PH Meters
- Conducto-meters
- Different Selective Electrodes
- Potentiometers
- Ovens
- Digital Voltmeters
- Analytical Balance
- Muffle Furnace

EXPERIMENTS

- Precision of Measurements
- PH Instrumentation and Measurements
- Buffers
- PH Titration
- Standardization of NaOH and Determination of an Unknown Acid
- Determination of a Carbonate Unknown
- Complexometric Titration of Zinc
- Titration of Chloride Unknown Solution by Volhard Method
- Analysis of Solid Specimen of Iron
- Gravimetric Determination of Nickel

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- Gravimetric Determination of Iron as Iron (III) Oxide
 - Gravimetric Determination of Calcium as $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$

TESTS AND SERVICES

- Preparation of Standard Solutions
- Quantitative and Qualitative Analysis of Ions and Metal

ORGANIC CHEMISTRY (I) LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 235	Amin Hasan	065052470
	Alaa Bihi	065053423

INTRODUCTION

This Laboratory course is designed to teach Practical Organic Chemistry for Chemistry students. This course covers various topics in the practical methods of separation, purification, extraction and synthesis of organic compounds as well as their identification.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Ovens
- Fractional Distillation
- Heating and Cooling Systems
- Melting Point Apparatus
- Water Purification System Type-1
- BET Sorptometer

EXPERIMENTS

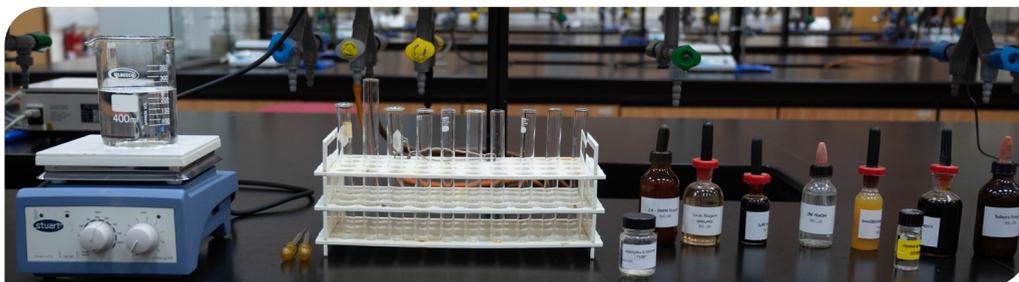
- Measuring Melting Points of Compounds and Mixtures
- Boiling points and Distillation (Simple & Fractional)
- Recrystallization of benzoic acid
- Extraction of Caffeine from Tea with Methylene Chloride
- Separation of a Mixture of Cyclohexane and Toluene by Fractional Distillation
- Nitration of Bromobenzene
- Oxidation of Alcohols – Preparation of Cyclohexanone
- Preparation of an Alkene from an Alcohol
- Steam Distillation – Isolation of an essential oil
- Separation by acid base extraction

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- Oxidation of Alcohols – Preparation of Adipic Acid
 - Identification of an Unknown – Carbonyl Group
 - Molecular Modeling

TESTS AND SERVICES

- Measuring Melting Points of Organic Compounds and Mixtures
- Thin Layer Chromatography – Analysis of Analgesic Drugs
- Isolation of Essential Oil

ORGANIC CHEMISTRY (II) LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 235	Amin Hasan	065052470
	Alaa Bihi	065053423

INTRODUCTION

This Laboratory course is designed to teach advanced Practical Organic Chemistry to Chemistry students. This course covers various syntheses of organic compounds and basic spectroscopic techniques for the identification of organic compounds.

EQUIPMENT AND INSTRUMENTS

- Distillation Systems
- Heating and Cooling Systems
- Melting Point Apparatus
- Spectroscopic Instruments
- NM Ready Spectrometer

EXPERIMENTS

- Benzil from Benzoin from Benzaldehyde
- Benzylic acid from benzil
- Cannizzaro reaction
- Diels-Alder Reaction
- Nitration of Bromobenzene
- Benzoic acid by haloform/Benzoic acid from Nitrile hydrolysis
- Reduction of nitrobenzene to aniline
- Dibenzalacetone by Aldol Condensation
- Borohydride Reaction of Benzil
- Synthesis of Stilbene from Benzoin
- Heterocyclic synthesis: benzimidazole synthesis
- Derivatives of 1,2-Diphenylethane – a Multi-Steps Synthesis

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- IR and NMR Spectroscopy

TESTS AND SERVICES

- Synthesis of Organic Compounds
- Identification of Organic Compounds by Spectroscopic Techniques

IDENTIFICATION OF ORGANIC COMPOUNDS LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 235	Hajar Ibrahim	065053441

INTRODUCTION

This course covers various physical properties, purity determination, molecular formulas, and classification by solubility, spectrometric methods, functional groups by chemical tests, preparation of derivatives and separation of mixtures are covered.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Distillation Systems
- Heating and Cooling Systems
- Melting Point Apparatus
- Spectroscopic Instruments
- NMR

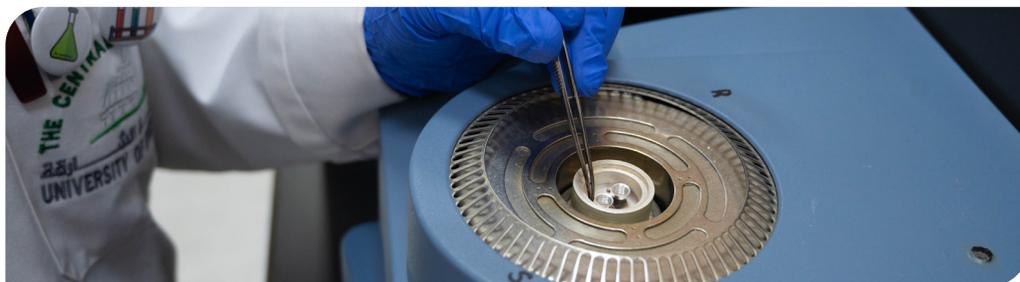
EXPERIMENTS

- Identification of Unknowns Preliminary Examination, Physical Properties, and Elemental Analysis
- Classification of Organic Compounds by Solubility
- Spectrometric Methods
- Chemical Tests for Functional Groups
- The Preparation of Solid Derivatives
- Separation of Mixtures
- Structural Problems- Solution Methods and Exercises

TESTS AND SERVICES

- Synthesis of Organic Compounds and their Derivatives
- Identification of Organic Compounds by Spectroscopic Techniques
- Separation of Organic Mixtures

INSTRUMENTAL ANALYSIS LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 231D	Nemat Dek AlBab	065053477
	Alaa Bihi	065053423

INTRODUCTION

This course is designed for Chemistry majors. Topics chosen to give a range of experiments in order to provide students with a solid background in practical instrumental analysis, which includes spectroscopic, electroanalytical and chromatographic methods.

EQUIPMENT AND INSTRUMENTS

- UV-Visible Spectrophotometer
- ICP-OES
- HPLC
- GC-FID
- Atomic Absorption Spectroscopy
- GC-MS
- Flame Photometry
- Cyclic Voltammetry
- Fluorophotometry Spectroscopy
- Automated Flash Chromatography
- Double Beam Spectrophotometer with Peltier system

EXPERIMENTS

- The Quantitative Determination of the Aspirin Content of Tablets Using UV Wavelength Spectroscopy
- Molecular Fluorescence, analysis of vitamin B2, riboflavin, by measuring its native fluorescence
- Determination of Water Hardness by Inductively Coupled Plasma (ICP) Optical Emission

Spectrometry (OES)

- Introduction to Mass Spectrometry, MALDI-TOF, analysis of high molecular weight proteins
- Determination of Sodium and Potassium in Fruit Juice by Flame Photometry
- Determination of Lead in Soil by Flame Atomic Absorption Spectrometry Flame Atomic Absorption
- Electrochemistry: Cyclic Voltammetry of Platinum in Ferro- / Ferri-Cyanide Solution
- Gas-Liquid Chromatography (GC): Analysis of Hydrocarbon Mixture
- Gas-Liquid Chromatography (GC): Analysis of Alcohols Mixture
- High-Performance Liquid Chromatography (HPLC): Determination of Caffeine in Beverages

TESTS AND SERVICES

- Metals Determination
- Characterization and Identification of Chemical Compounds Mixtures

INORGANIC CHEMISTRY LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 239	Kifah Al Taqaz	065053475

INTRODUCTION

This course includes experiments that aim to develop the student's laboratory skills and demonstrate many important techniques in inorganic chemistry. Experiments based upon synthesis and physical measurements of coordination and organometallic compounds.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- UV-Visible Spectrophotometer
- Hot Plates with Stirrers
- Gouy Balance

EXPERIMENTS

- Preparation of [Hexaamminenickel (II)] Chloride, $[\text{Ni}(\text{NH}_3)_6]\text{Cl}_2$
- Preparation of Hexaamminecobalt (III) Chloride, $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
- Preparation of Carbonatotetraamminecobalt (III) Nitrate, $[\text{Co}(\text{NH}_3)_4\text{CO}_3]\text{NO}_3$
- Preparation of [Chloropentaamminecobalt(III)] Chloride by two Methods, $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$
- Nitritopentaamminecobalt(III) Chloride & Nitropentaamminecobalt(III) Chloride $[\text{Co}(\text{NH}_3)_5\text{ONO}]\text{Cl}_2$ & $[\text{Co}(\text{NH}_3)_5\text{NO}_2]\text{Cl}_2$
- Synthesis of Cis-Potassium Diaquabis(Oxalato)Chromate(III) Dihydrate: Cis- $\text{K}[\text{Cr}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})_2] \cdot 2\text{H}_2\text{O}$
- Synthesis of Cis-Potassium Diaquabis(Oxalato)Chromate(III) Dihydrate: Cis- $\text{K}[\text{Cr}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})_2] \cdot 2\text{H}_2\text{O}$
- Magnetic Susceptibility, Magnetism
- UV-Vis Spectra for Transition-Metal Complexes
- Preparation of Cis and Trans Bis (Glycinato)Copper(II).Hydrate
- Preparation of Metal Acetylacetonato Compounds

PHYSICAL CHEMISTRY (I) LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 239	Hajar Ibrahim	065053411

INTRODUCTION

This course covers the necessary laboratory techniques for physical measurements, error analysis and statistics through conducting experiments on gases, calorimetry, equilibrium and phase changes.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Viscometer
- Barometers
- Manometer
- Water Bath
- Temperature Sensor
- Shakers
- Pressure Sensor
- Bomb Calorimeter
- Gas Gauge
- Refractometer
- Differential Scanning Calorimeter (DS)

EXPERIMENTS

- Fundamentals: Error Analysis and Data Collection
- Heat Capacity Ratios for Gases
- Bomb Calorimeter (Heat of Formation of Sucrose and Naphthalene)
- The Vapor Pressure and Heat of Vaporization of Liquids
- Determination of Resonance Energy of Benzene
- Adiabatic Flame Calorimeter

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- The Vapor Pressure and Heat of Vaporization of Liquids
 - Determination of pKa of methyl Red (Spectroscopic Analysis)
 - Liquid-Vapor Phase Diagram: Calibration using Refractive Indices
 - Liquid-Vapor Phase Diagram: Constructing the Phase Diagram
 - Molecular Weight and Monomer Linkage Properties of Poly (Vinyl Alcohol)
 - Phase Diagram of Tertiary System
 - Dissociation of Ammonium Carbamate
 - DSC

TESTS AND SERVICES

- Thermal Analysis

PHYSICAL CHEMISTRY (II) LABORATORY



Location	Lab Staff in Charge	Contacts
W12- 239	Kifah Al Taqaz	065053475

INTRODUCTION

Physical Chemistry (II) Laboratory introduces students to advanced laboratory skills and techniques to study chemical reactions kinetics and mechanisms.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Viscometer
- Ovens
- Manometer
- Oxygen Gas Sensors
- Pressure Sensor
- Gas Sensors
- Temperature Sensor
- Conductometer

EXPERIMENTS

- Measurements, Precision and the Treatment of Experimental Data in the Physical Chemistry Laboratory
- Surface Tension. Properties of Liquids
- Study the Effect of Temperature on the Surface Tension of Water
- Viscosity of Liquids: Low Viscosities. The Flow Times of each of (Methanol/Water) and (Toluene/P-Xylene) Solutions at 25°C
- The Flow Times of P-Xylene at Different Temperatures
- Viscosity of Liquids: High Viscosities. Using Falling Ball Viscometer: Measuring the Falling Times of Glycerol vs. Temperature
- Determination of Collision Diameters from Gas Viscosities

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- Enzyme Action: Testing Catalase Activity in Different Conditions; Enzymatic Hydrolysis of Hydrogen Peroxide by Peroxidase
 - Enzymatic Hydrolysis of Hydrogen Peroxide by Peroxidase. Testing the Effect of Temperature
 - Kinetics and Mechanism of Heterogeneous Reaction: Oxidation of Magnesium by Hydrochloric

TESTS AND SERVICES

- Gas and Liquid Viscosity Determination

GENERAL CHEMISTRY LABORATORY (FOR HEALTH SCIENCES STUDENTS)



Location	Lab Staff in Charge	Contacts
W12-240	Reem Alteneiji	065053445
M12-031	Amin Hasan	065053470
M12-029	Alaa Bihi	065053423

INTRODUCTION

This Laboratory is designed to teach General Chemistry for the College of Health Sciences. The main purpose of this lab is to provide students with a strong practical basis in the principles and practices of Chemistry to conduct various qualitative and quantitative experiments.

EQUIPMENT AND INSTRUMENTS

- Analytical Balances
- Heating and Cooling Systems
- Ovens
- PH Meters
- Heating Cabinets
- Hot Plates with Stirrers
- Centrifuges

EXPERIMENTS

- The Scientific Methods: Measurements and Significant Figures
- Determination of the Density of Liquids and Solids
- Melting Point and Boiling Point
- Determination of the Gas Constant R
- Quantitative Yield of a Redox Reaction
- Composition of Hydrated Salt
- Qualitative Analysis of Anions
- Qualitative Analysis of Cations
- Quantitative Analysis: Acid-Base Titration

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- Hydrolysis
 - Paper Chromatography
 - Heat of Reaction

TESTS AND SERVICES

- Density of Liquids and Solids Determination
- Melting and Boiling Point Determination
- Qualitative Determination of Anions and Catio

GENERAL CHEMISTRY LABORATORY (FOR MEDICAL SCIENCES STUDENTS)



Location	Lab Staff in Charge	Contacts
M12-029	Amin Hasan	065053470
M12-031	Hajar Ibrahim	065053441

INTRODUCTION

This Laboratory course is designed to teach Practical General Basic and Organic Chemistry to medical students. This course covers various topics in the practical methods of purification, identification, chromatography and synthesis of organic compounds. It also covers qualitative and quantitative aspects of the General Chemistry Laboratory.

EQUIPMENT AND INSTRUMENTS

- Heating and Cooling Systems
- Analytical Balances
- Ovens
- Centrifuges
- Suction Filtration
- Hot Plates with Stirrers
- UV/Vis

EXPERIMENTS

- Qualitative Analysis of Anions and Cations
- Purification by Recrystallization
- Liquid-Liquid Extraction- Cellulose recovery from a mixture of caffeine, cellulose, and benzoic acid
- Synthesis of Aspirin
- Oxidation of Alcohols: Preparation of Benzoic Acid
- Identification of Alcohols
- Identification of Aldehydes and Ketones
- Quantitative Analysis: Acid-Base Titration

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- Thin Layer Chromatography of phenol, benzoic acid, and butyl phenyl ether. Effect of solvent composition
 - Quantitative analysis of Amino acids using UV-VIS

TESTS AND SERVICES

- Qualitative Analysis of Anions and Cations
- Acid-Base Titration

ORGANIC CHEMISTRY LABORATORY (FOR HEALTH SCIENCES STUDENTS)



Location	Lab Staff in Charge	Contacts
M12-029	Amin Hasan	065053470
W12-235	Hajar Ibrahim	065053441

INTRODUCTION

This Laboratory course is designed to teach Practical Organic Chemistry to Health Sciences students. It covers various topics in the practical methods of separation, purification, identification and synthesis of organic compounds.

EQUIPMENT AND INSTRUMENTS

- Rotatory Evaporator
- Hot-Plates with Magnetic Stirrers
- Distillation System
- Ovens
- Analytical Balances
- Melting Point Apparatus
- Heating and Cooling Systems

EXPERIMENTS

- Purification by Recrystallization
- Isolation of Caffeine from Tea Leaves
- Synthesis of Aspirin
- Identification of Alcohols and Phenols
- Properties of Carboxylic Acids and Esters
- Properties of Amines and Amides
- Synthesis of Polymers
- Nitration of Methyl Benzoate
- Oxidation of Alcohols
- Identification of Aldehydes and Ketones
- Preparation and Properties of Soap
- Structure in Organic Compounds

TESTS AND SERVICES

- Separation, Purification and Identification of Organic Compounds.

ANALYTICAL CHEMISTRY LABORATORY (FOR HEALTH SCIENCES STUDENTS)



Location	Lab Staff in Charge	Contacts
M12- 034	Mohamed Al-Farouq	065052470

INTRODUCTION

This Laboratory is designed to teach Practical Analytical Chemistry to Health Sciences students. It covers the concepts of basic practical analytical chemistry. Students learn the standard methods of volumetric and gravimetric analysis.

EQUIPMENT AND INSTRUMENTS

- PH Meters
- Conductometers
- Different Selective Electrodes
- Potentiometers
- Ovens
- Digital Voltmeters
- Analytical Balances
- Muffle Furnace

EXPERIMENTS

- Precision of Measurements
- PH Instrumentation and Measurements
- Buffers
- Potentiometric Titration
- Standardization of NaOH and Determination of an Unknown Acid
- Determination of a Carbonate Unknown
- Complexometric Titration of Zinc
- Titration of Chloride Unknown Solution by Volhard Method
- Analysis of Solid Specimen of Iron
- Gravimetric Determination of Nickel

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- Gravimetric Determination of Iron as Iron (III) Oxide
 - Gravimetric Determination of Calcium as $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$
 - Redox Titration of Vitamin- C (Iodometric Method)

TESTS AND SERVICES

- Preparation of Standard Solutions
- Quantitative and Qualitative Analysis of Ions and Me

CHEMISTRY STUDENTS RESEARCH (LAB 1)



Location	Lab Staff in Charge	Contacts
W12-231	Prof. Raed Al Qawasmeh	065051718
	Prof. Ideisan Abu-Abdoun	065053810
	Dr. Mohamed El-Naggar	065053816

INTRODUCTION

Several types of Polymers and Organic Chemistry Research are carried out in this lab such as:

- Extraction of Various Organic Natural Products
- Synthesis biologically relevant compounds
- Synthesis of new organic scaffolds
- Application of Ne methodology in organic synthesis
- Synthesis of Different Water-Soluble Polymers and Polymer Blend
- Identification of Major Organic Functional Groups
- Catalysis
- Polymer Characterization and Analysis
- Forensic Chemistry
- Synthesis of gold nanoparticles

EQUIPMENT AND INSTRUMENTS

- High Performance Liquid Chromatography (HPLC)
- UV/Visible Spectrometer
- ATR-IR
- Various Types of Glassware
- Rotary Evaporator
- Refractometers
- Shakers
- Heating Mantles
- Magnetic Stirrer Hotplates
- General Purpose Water Bath

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- Vacuum Oven
 - Analytical Balances
 - Viscometer
 - Electrochemical workstation
 - Gas Chromatograph Mass Spectrometer – Shimadzu

TESTS AND SERVICES

- Offering Consultancy on Polymer Synthesis, Characterization and Analysis
- Separation and Identification of Natural Products
- Custom synthesis for any organic compounds

CHEMISTRY STUDENTS RESEARCH (LAB 2)



Location	Lab Staff in Charge	Contacts
W12-232	Prof. Monther Khanfar	065051731
	Prof. Abdelnasser Metwally	065166707
	Dr. Ayssar Nahle	065053812
	Dr. Ahmed Almehdi	065053813
	Dr. Abdelaziz Elgamouz	065051769
	Dr. Kamrul Hassan	065051768

INTRODUCTION

Several types of Analytical and Bioanalytical Chemistry Research are carried out in this lab such as:

- Industrial Analysis
- Water Analysis and Treatment
- Corrosion and Protection of Metals
- Electrochemistry
- Bioanalytical Assays
- Protein Analysis
- Lipids Analysis

EQUIPMENT AND INSTRUMENTS

- Electrochemical Workstation
- Impedance Spectrometer
- Ultrasonic Water Bath
- Various Types of Glassware
- Analytical Balances, Conductometers, PH Meters, etc.
- Rotary Evaporator
- UV-Vis

TESTS AND SERVICES

- Offering consultancy in:
 - Corrosion Protection & Control
 - Industrial Processing
 - Environmental Analysis
 - Waste Products Analysis
 - Techniques Validation
- The following may be analyzed:
 - PH of Soil
 - Water Soluble Sulfate in Ground Water and Soil Extracted
 - Water Soluble of Chloride in Ground Water and Soil Extracted
 - Acid Soluble Chloride in Soil
 - Acid Soluble of Sulfate in Soil
 - Water Soluble Chloride in Aggregate
 - Specific Gravity and Water Absorption in Cores Aggregate
 - Specific Gravity and Water Absorption of Fine Aggregate
 - Acid Soluble Chloride in Aggregate
 - Acid Soluble Sulfate in Aggregate
 - Water Soluble Sulfate in Aggregate
 - Acid Soluble Materials in Fine Aggregate
 - Chloride Content of Cement
 - PH Value in Water
 - Chloride Content in Water
 - Sulfate Content in Water
 - Total Dissolved Solids in Water
 - PH Value of Water and Wastewater
 - Conductivity of Water and Wastewater
 - Total Dissolved Solids in Water and Wastewater
 - Suspended Solids in Water and Wastewater
 - Total Solids in Water and Wastewater
 - Acidity in Water and Wastewater
 - Alkalinity in Water and Wastewater
 - Nitrate – Nitrogen in Water and Wastewater
 - Nitrite – Nitrogen in Water and Wastewater
 - Sulfate in Water and Wastewater
 - Chloride in Water and Wastewater
 - Volatile Solids in Water and Wastewater
 - Heavy Metal Analysis (Hg, Pb, Cd, Cu, Cr, Co, Zn, Mn)

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- Some techniques commonly used in bioanalytical studies include:
 - HPLC (High Performance Liquid Chromatography)
 - GC-MS (Gas Chromatography)
 - TGA (Thermal Gravimetric Analysis)
 - DSC (Differential Scanning Calorimetry)
 - Thin Layer Chromatography
 - Electrophoresis
 - Ligand Binding Assays
 - ELISA (Enzyme-linked Immunosorbent Assay)
 - Nuclear Magnetic Resonance
 - Determination of the Physico-Chemical Parameters of Drinking Water and Groundwater (Cl⁻, NO₃⁻, NO₂⁻, SO₄²⁻, NH₄⁺, pH, Electrical Conductivity, DCO, Hydrocarbons, Bacteria etc.) and (Na⁺, K⁺, Mg²⁺, Ca²⁺, Pb²⁺, Cd²⁺...etc)
 - Volumetric, Gravimetric, Flame Atomic Absorption Spectrometry
 - Bacterial Testing Including Test for Total Coliforms, Fecal Coliforms, Streptococcus, Vibrio Cholerae and Salmonella
 - Preparing Liquid Media and Solid Media (Loryl, Roth, Vert brilliant, Litsky, Tergitol 7 Agar, Slanetz, Kligle,...)
 - Protein Content
 - Lipids Content
 - Derivatization of Fatty Acids
 - Ash Measurements
 - DPPH Scavenging Activity
 - Hydroxyl Radical Scavenging Activity
 - Metal Chelating
 - Polyphenol and Flavonoid Content
 - Reducing Power Method (RP)
 - Hiobarbituric Acid Reactive Substances (TBARS)
 - Protein Carbonyl Measurements