



Course Title: General Chemistry

Course Code: CHEM 101

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (3 hours (2+2+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): None

Co- requirements for this course (if any): None

Course general Description:

The course (General Chemistry) will focus on the principles and basics of chemistry science; atomic structure, periodic table, electron configuration, chemical bonds, Mole concepts, chemicals formula, empirical and molecular formula, balance of chemical equations, states of matter; an introduction for all material states, deep looking at gaseous state, chemical equilibrium, reversible and irreversible reactions, factors affecting the chemical equilibrium, ionic equilibrium, and solutions, concentrations concept, concentration units.



Course Title: General Chemistry 2
Course Code: CHEM 102
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: (3(2+1))
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): CHEM 101
Co- requirements for this course (if any): None
Course general Description: Theoretical Part: Molecular notation and the shapes of molecules, theories of bonding, and study of elements of main groups. Practical Part: Experiments related to the topics discussed in the course, such as detection of acidic and basic radical in simple salts.



Course Title: **organic chemistry (1)**

Course Code: **Chem 141**

Program: **Bachelor of Science in Chemistry**

Department: **Chemistry**

College: **Science College**

Institution: **Princess Nourah Bint Abdulrahman University**

Credit hours: (4 hours (3+1+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 101

Co- requirements for this course (if any): None

Course general Description:

Introduction in organic chemistry, reaction, preparations and nomenclature of Hydrocarbon compounds and Aromatic compounds.



Course Title: Thermodynamic
Course Code: CHEM 211
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: 3 hours, (2 +2 + 0)
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): General Chemistry (CHEM 101)
Co- requirements for this course (if any): None
Course general Description: Thermodynamics describes the laws of thermodynamics related to energy, their forms, transformations and their applications in the chemical reactions and ideal and non-ideal chemical systems.



Course Title: Phases of Matter and Solutions

Course Code: CHEM 212

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours (2+0+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 101

Co- requirements for this course (if any): None.

Course general Description:

Solid state: Types of solid, structure of crystal, types of crystals, X-ray crystallography, crystal defects, liquid crystal. Solutions and their types, solutions of gases in gases, solutions solid in solid, solutions solid in liquids in liquids. Phase changes: Phase rule and phase diagrams of different-components systems.



Course Title: Organic Chemistry 2

Course Code: CHEM 242

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (4 hours (3+2+0))

Course type:

- A) University College Department Track Others
 B) Required Elective

Pre-requirements for this course (if any): Organic Chemistry (1) (CHEM 141)

Co- requirements for this course (if any): None

Course general Description:

Theoretical Part: The course is including studying of some organic families, its nomenclature and methods of its preparation and its reactions – Alkyl halides - Alcohols and ethers and epoxides – Phenols - Aldehydes and ketones - Carboxylic acids and its derivatives - Amines - Applications and uses of organic compounds

Practical Part: Related laboratory experiments to acquire practical experience in the study of previous compounds reactions and identification of it as an unknown compound.



Course Title: Chemistry of Heterocyclic Compounds

Course Code: CHEM 243

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: 2(2+0+0)

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 242

Co- requirements for this course (if any): None

Introduction to heterocyclic compounds and their importance and methods of naming heterocyclic compounds - Classification of heterogeneous ring compounds - Naming - Basal property - Acidic properties - Aromatic properties - Preparation and reaction of Five membered ring compounds with one heteroatom or two heteroatoms (pyrrole - furan - thiophene - pyrazole – imidazole – oxazole - isoxazole - thiazole and isothiazole) - Six membered ring compounds with one heteroatom or two heteroatoms such as (pyridine – pyrimidine - pyrazine and pyridazine). Fused ring heterocyclic compounds (indole - quinoline – isoquinoline).



Course Title: Advanced Organic Chemistry Lab

Course Code: CHEM 244

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours (0,4,0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 242

Co- requirements for this course (if any): None

Course general Description:

Advanced experiments in organic preparations including applications in green chemistry, Preparation of some heterocyclic compounds and study of their physical and chemical properties. Separation natural products. Synthesis and properties of some polymers.



Course Title: Biochemistry
Course Code: CHEM 251
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: (3 hours, (2+2+0))
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): Organic Chemistry (2) (CHEM 242)
Co- requirements for this course (if any): None
Course general Description: This course will cover the principals of biochemistry which includes understanding the basic structures of body macromolecules such as proteins, nucleic acids, enzymes, carbohydrates, and lipids. Also, to link between enzymes effect and bio reactions, to specify the relationship between nucleic acids and genetic characteristics, to describe the relationship between some blood diseases and minerals deficiency and to link between biochemical structures and its importance inside human body.



Course Title: Training in Scientific Research Skills

Course Code: CHEM 291

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2hours (2+0+0))

Course type:

A) University College Department Track Others

B) Required Elective

Pre-requirements for this course (if any): None

Co- requirements for this course (if any): None

Course general Description:

- Introduction to the ethics of scientific research and scientific honesty.
 - Introduction to scientific research methods.
 - How to make research literature, how to read a scientific paper, how to infer, record and present research results, write reports and draw recommendations, prepare a research proposal on a specific subject.
 - Training and definition of the student on the databases and different sources of learning and how to quote them.
 - Preparation of presentations, preparation of posters, lecture, time management, teamwork.
 - Data collection and analysis using modern statistical software.
- Training of students on modern devices and technologies in the field of specialization in educational departments.



Course Title: Computational Chemistry
Course Code: CHEM 307
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: (1 hour (0+2 + 0))
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): General Chemistry (CHEM 101)
Co- requirements for this course (if any): None
Course general Description: The field of computational chemistry encompasses the development and application of numerical methods for the study of chemical systems. The successful investigation of problems in chemistry using computational chemistry requires both an understanding of the nature of the chemistry being studied and an understanding of the computational methods employed. The theoretical framework of computational chemistry methods will be presented briefly, as far as necessary for understanding the methods. Emphasis will be placed on practical understanding of the strengths, weaknesses, and ranges of applicability of different methods. This knowledge will allow for the critical evaluation of the validity and accuracy of results and of the conclusions derived from the computational chemistry modelling of particular chemical problems. The laboratory component provides an introduction to the use of computational chemistry software.



Course Title: Kinetic Chemistry

Course Code: CHEM 313

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (3 hours, (2 +2+1))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): Thermodynamic Chemistry (CHEM 211)

Co- requirements for this course (if any): None

Course general Description:

Kinetic chemistry describes the rate law of the different orders of chemical reactions, constant rate of reaction, half-life of the reaction for each case, determination of the reaction arrangement, Arrhenius equation, activation energy, reaction rate theories and complex reactions.



Course Title: Quantum Chemistry

Course Code: CHEM 314

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours (2+0+0))

Course type:

A) University College Department Track Others

B) Required Elective

Pre-requirements for this course (if any): CHEM102
MATH 221

Co- requirements for this course (if any): None.

Course general Description:

The course will introduce quantum mechanics as applied to chemistry. This course covers the following topics:

Particle Nature of Radiation: The Origin of Quantum Theory: (Blackbody Radiation: Planck's Quantum Hypothesis, The Photoelectric Effect, and Dual Nature of Radiation).

Atoms and the Bohr Model: (Atomic Spectra and Bohr Model of Hydrogenic Atoms).

Wave Nature of Matter and the Need for a Wave Function: De Broglie's Hypothesis, The Need for a Wave Function and Born's Interpretation of the Wave Function.

Heisenberg's Uncertainty Principle

The Schrödinger Equation: The Time-Dependent Schrödinger Equation.

Postulates of Quantum Mechanics

Some Analytically Soluble Problems: (The Particle in a Box, The Harmonic Oscillator, The Rigid Rotor, and The Hydrogen Atom).



Course Title: Electrochemistry (1)

Course Code: CHEM 315

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (4 hours (3 theor.+2 exper.))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 211

Co- requirements for this course (if any): None

Course general Description:

Oxidation and reduction reactions - Balancing of oxidation and reduction equations. Galvanic cell - electro driving force. Nernst equation - Cell types and applications. Analytical cells. Corrosion and corrosion protection and training and solving problem



Course Title: Surface Chemistry & Catalysis

Course Code: CHEM 316

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (4 hours (2+4+0))

2h (lecture) + 4h (practical)

Course type:

A) University College Department Track Others

B) Required Elective

Pre-requirements for this course (if any): CHEM 313 and CHEM 211

Co- requirements for this course (if any): None

Course general Description:

In this course, student will study

-Catalysis: Definition, Types, characterizations, activation energy and catalytic reaction, catalysis theories, autocatalysis, enzyme catalysis, activation energy and catalysis inhibition, promoters, poisoning, applications.

-Adsorption: Definition, types, adsorption of gases and solution on the solid surface, adsorption isotherms, adsorption applications.

-Surface tension, determination of the surface tension, Adsorption at interfacial solution and Gibbs equation, surfactants.

-Colloids: Definition, Types, properties of colloids, preparation methods, purification of colloids and the stability of the colloidal solution.



Course Title: : Nuclear and Radiation Chemistry

Course Code: CHEM 318

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: : 2hours (2,0,0)

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 314

Co- requirements for this course (if any): None

Course general Description:

Historical background, the nature of nuclear reactions, nuclear stability, binding energy. Radioactive decay, types of radiation, kinetic of radioactive decay. Natural decay series, detection of radiation, units of radioactivity, artificial radioactivity, nuclear fission, nuclear reactor, nuclear fusion, nuclear accelerator. Interaction of radiation with matter. Uses of radionuclides and the effects of radiation.



Course Title: Molecular Spectra and Laser

Course Code: CHEM 319

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours (2+0+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 314

Co- requirements for this course (if any): None.

Course general Description:

Explain the reactions between the matter and radiation- Comparison between the absorption and emission of radiation processes- Selection rules for each type of spectra applied to various molecules.



Course Title: Transition Elements
Course Code: CHEM 321
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: (4 hours (3+2+0))
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): CHEM 102
Co- requirements for this course (if any): None
Course general Description: Introduction to transition elements - History of Coordination Chemistry -Metal-Ligand Bond & ligands – coordination numbers –Naming of coordination compounds (IUPAC) -Theories of Computation of Coordinated compounds- Effect atomic number role - Isomerism. -The valence bond theory-The crystal field theory -Ligand field theory -Color & magnetic Properties of d-Block Compounds. Practical Part : Experiments related to the topics discussed in the course, such as the preparation of some synthetic compounds and the study of their physical and chemical properties.



Course Title: Quantitative Analysis

Course Code: CHEM 331

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (4hours (3+2+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): General Chemistry (CHEM 101)

Co- requirements for this course (if any): None

Course general Description:

The basic of quantitative analysis- concentration units-Factors affecting the chemical equilibrium- Neutralization titration- Redox titration- Precipitation Titration Complex Metric Reactions and Titrations- Introduction to gravimetric analysis- Solubility Product Constants Factors Effecting Solubility- Mechanism be sediment types - Classification of impurities- ways to improve the characteristics of the precipitation - reagents precipitated organic and inorganic.



Course Title: : Chromatographic separation methods

Course Code: CHEM 332

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (3hours (2+2+0))

Course type:

A) University College Department Track Others

B) Required Elective

Pre-requirements for this course (if any): CHEM 331

Co- requirements for this course (if any): None

Course general Description:

Introduction on the origin of chromatography -Solvent extraction -- Theories of separation - Mechanisms of separation of chromatography-Thin film chromatography - Column chromatography - Paper chromatography - Chromatography transducers -Ionic - gas chromatography - high efficiency liquid chromatography



Course Title: **Organic Compounds Spectroscopy**

Course Code: **CHEM 345**

Program: **Bachelor of Science in Chemistry**

Department: **Chemistry**

College: **Science College**

Institution: **Princess Nourah Bint Abdulrahman University**

Credit hours: **3 hours (3+0+0)**

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): **CHEM 243**

Co- requirements for this course (if any): **None**

Course general Description:

An introduction to the electromagnetic radiation and spectroscopic methods, UV Spectroscopy, IR Spectroscopy, $^1\text{H-NMR}$ and $^{13}\text{C-NMR}$ Spectroscopy, Mass Spectra.



Course Title: Green Chemistry
Course Code: CHEM 346
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: 2(2+0+0)
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input type="checkbox"/> Required <input checked="" type="checkbox"/> Elective
Pre-requirements for this course (if any): Organic Chemistry (CHEM 242)
Co- requirements for this course (if any): None
Course general Description: Principles and concepts of green chemistry, green methods preparation, green catalysts, friendly environment chemical components, fuel and its safe substitutes some environment problems related to industrial wastes, Impact of human activity on environment, water and future issues, renewable energy and recycling



Course Title: Chemical Pollution and Industrial Safety

Course Code: CHEM 361

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours (2+0+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 331

Co- requirements for this course (if any): None

Course general Description:

Types of pollution and pollutants. Air pollution. Analysis of air pollutants. Soil pollution. Control of soil pollution. Water pollution. Types of water pollutants. Radioactive pollution. Oil Pollution. Toxicity of metals.



Course Title: Industrial inorganic chemistry

Course Code: CHEM 371

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2hours (2+0+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 102

Co- requirements for this course (if any): None

Course general Description:

Introduction to inorganic industries, raw materials in inorganic industries, raw materials in inorganic industries - metals and their industrial compounds, fertilizers, acides, glass ceramics, cement and Nuclear Fuel Cycle.



Course Title: Mechanism of Inorganic Reactions

Course Code: CHEM 422

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours (2+0+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 102

Co- requirements for this course (if any): None

Course general Description:

The course describe; Inorganic reactions - mechanical reactions types - Coordination Compounds- stability of complexes - thermodynamic stability - kinetic stability - introduction to complex - Substitution Reactions of Octahedral Complexes- Mechanism of ligand substitution for square planar complexes - types of ligands and their relation to metal - trans-effect - reactions of oxidation and reduction - reactions Interstitial and internal interactions - Equilibrium reactions - Some laws of speed of reaction - Types of consistency - Geometric shapes of the complexes - Isomerism - Types of substitution reactions



Course Title: Chemistry of lanthanides and Actinides

Course Code: CHEM 423

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 (2+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): Chem 423

Co- requirements for this course (if any): None

Course general Description:

Study the lanthanide and Actinides elements and its compounds



Course Title: Organometallic Chemistry

Course Code: CHEM 424

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2(2+0+0))

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): Transition metals chemistry (CHEM 321)

Co- requirements for this course (if any): None

Course general Description:

This course will be focus on the chemistry of organometallic compounds of the main-group elements and of the transition elements. the course present the fundamental information of these compounds which is include the preparation methods, the classification of organic and inorganic ligands ,energy, polarity and reactivity of M-carbon bond, organometallic compounds reactions. Finally the course illustrate the important role of organometallic compounds as homogenous catalysis .



Course Title: Instrumental Analysis 1

Course Code: CHEM 433

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: 2 hours (2+0+0)

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): CHEM 331

Co- requirements for this course (if any): None

Course general Description:

Introduction in to spectroscopic –visual and ultraviolet field –way of spectroscopic analysis
Particle analysis, molecular absorption of infrared radiation, atomic absorption, atomic emission,
molecular emission, atomic emission in plasma, thermal analysis.



Course Title: Instrumental Analysis 2
Course Code: CHEM 434
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: 2 hours (2+0+0)
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): CHEM 433
Co- requirements for this course (if any): None
Course general Description: Introduction to electroanalytical techniques, Potentiometric methods (Ion selective electrodes ,Molecular selective electrodes) , Volumetric and Polarographic analysis techniques , Amperometric titration and Colorimetric methods .



Course Title: Instrumental Analysis Lab
Course Code: CHEM 435
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: (1 hour (0+2+0))
Course type: A) <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others B) <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
Pre-requirements for this course (if any): Instrumental analysis 1 – CHEM 433
Co- requirements for this course (if any): None
Course general Description: This course explores the fundamental basis of chemical analysis. It is designed to give the student a solid conceptual ground to understand how a given analytical technique works, including its limits and advantages. The emphasis is on solutions analysis and the course is roughly divided into: (i) spectroscopy; and (ii) electroanalytical methods.



Course Title: Organic Reaction Mechanism

Course Code: CHEM 447

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: 3 hours (3+0+0)

Course type:

- A) University College Department Track Others
 B) Required Elective

Pre-requirements for this course (if any): CHEM 243

Co- requirements for this course (if any): None

Course general Description:

An introduction to the mechanics of organic reactions - the factors affecting the mechanism of organic reactions -relationships between organic chemical structures and their reactivity. Studies of reaction mechanisms in elimination, substitution, addition and rearrangement reactions, redox, radical reactions, including how to suggest a reaction mechanism for some reactions.



Course Title: Polymer Chemistry

Course Code: CHEM 448

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: 2 (2+0+0)

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any): Heterocyclic Chemistry (CHEM 243)

Co- requirements for this course (if any): None

Course general Description:

This course covers different topics related to the chemistry of polymers, polymerization terms, methods of classification and properties, polymerization mechanisms, properties of polymers



Course Title: Natural Products Chemistry

Course Code: CHEM 449

Program: Bachelor of Science in Chemistry

Department: Chemistry

College: Science College

Institution: Princess Nourah Bint Abdulrahman University

Credit hours: (2 hours)

Course type:

- A) University College Department Track Others
B) Required Elective

Pre-requirements for this course (if any):

Spectroscopy of Organic Compounds (CHEM 345)

Co- requirements for this course (if any): None

Course general Description:

Definition of natural products, classification of natural groups, separation and purification, principle of biosynthesis of natural products, Terpenes and Steroids, Alkaloids, Phenolic compounds including Coumarins, Xanthones and Anthraquinones.

**Course Title: Graduation Project****Course Code: CHEM 492****Program: Bachelor of Science in Chemistry****Department: Chemistry****College: Science College****Institution: Princess Nourah Bint Abdulrahman University****Credit hours: 3 hours.(0+6+0)****Course type:**A) University College Department Track OthersB) Required Elective**Pre-requirements for this course (if any):** None**Co- requirements for this course (if any):** None**Course general Description:**

The course aims to train the student on the basics of research, collecting information, reaching results and presenting them. The student chooses the specialization on which she plans to conduct her graduation project, according to the department's availability in terms of the number of students, lab equipment and technicians necessary to supervise the student's work.

-The research plan is discussed with the supervising faculty member of the chosen specialization.

-The project includes theoretical and practical parts, containing various lab experiments and supported with graphic drawings, if any, as well as statistical processes and other research requirements.

-The student offers an electronic presentation of her research findings to the examination committee. Two of the specialized faculty members assess the student's work and mark the grades on both the written presentation and the student's oral answers.



Course Title: Field Experience
Course Code: CHEM 493
Program: Bachelor of Science in Chemistry
Department: Chemistry
College: Science College
Institution: Princess Nourah Bint Abdulrahman University
Credit hours: (6 credit hours).
Level/year at which Field Experience is offered: (8th level/ 4th year).
Time allocated for Field Experience activities: Number of weeks: (4-15) weeks *There is a flexibility depending on the training sector, the essential requirement is the total number of training hours must be 30 hours or more.
Corequisite (or prerequisites if any) to join Field Experience: Student must pass 120 hours.
Mode of delivery <input checked="" type="checkbox"/> In-person/onsite <input type="checkbox"/> hybrid (onsite/online) <input type="checkbox"/> Online