Krishnasamy College of Science, Arts & Management for Women, Cuddalore.

204 B. Sc. Chemistry(2023-24)

23UCHE13-GENERAL CHEMISTRY-I

Course Learning Outcomes
On completion of the course the students should be able to

CO1: explain the atomic structure, wave particle duality of matter, periodic properties bonding, and properties of compounds.
CO2: classify the elements in the periodic table, types of bonds, reaction intermediates electronic effects in organic compounds, types of reagents.
CO3: apply the theories of atomic structure, bonding, to calculate energy of a spectral transition, Δx, Δp electronegativity, percentage ionic character and bond order.
CO4: evaluate the relationship existing between electronic configuration, bonding, geometry of molecules and reactions; structure reactivity and electronic effects
CO5: construct MO diagrams, predict trends in periodic properties, assess the properties of
elements, and explain hybridization in molecules, nature of H – bonding and organic reaction mechanisms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	M	S	M
CO2	M	S	S	S	M	S	S	M	M	M
CO3	S	S	S	M	S	S	S	M	S	M
CO4	S	S	S	S	S	S	S	M	M	M
CO5	S	M	S	S	S	S	S	M	M	S

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

23UCHEF17-INTRODUCTORY CHEMISTRY

Course Learning Outcomes
On completion of the course the students should be able to

CO1: to understand laboratory safety and hygiene.
CO2: to understand principle of titrations.
CO3: to understand semi micro analysis.
CO4: to understand basics of organic compound analysis.
CO5: to understand about gravimetric analysis

	PO 1	PO2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	M	S	M
CO2	M	S	S	S	M	S	S	M	M	M
CO3	S	S	S	M	S	S	S	M	S	M
CO4	S	S	S	S	S	S	S	M	M	M
CO5	S	M	S	S	S	S	S	M	M	S

CO/PSO	PSO1	PSO 2	PSO3	PSO4	PSO5
CO1	2	2	2	2	2
CO2	2	2	2	2	2
CO3	2	2	2	2	2
CO4	2	2	2	2	2
CO5	2	2	2	2	2
Weightage	10	10	10	10	10
Weighted percentage of Course Contribution to Pos	2.0	2.0	2.0	2.0	2.0

Level of Correlation between PSO's and CO's

23UCHEC23-GENERAL CHEMISTRY-II

Course Learning Outcomes
On completion of the course the students should be able to

CO1: explain the concept of acids, bases and ionic equilibria; periodic properties of s and p-block elements, preparation and properties of aliphatic and aromatic hydrocarbons

CO2: discuss the periodic properties of sand p- block elements, reactions of aliphatic and aromatic hydrocarbons and strength of acids

CO3: classify hydrocarbons, types of reactions, acids and bases, examine the properties s and p-block elements, reaction mechanisms of aliphatic and aromatic hydrocarbons

CO4: explain theories of acids, bases and indicators, buffer action and important compounds of s-block elements

CO5: assess the application of hard and soft acids indicators, buffers, compounds of s and p-block elements and hydrocarbons

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	M	S	M
CO2	M	S	S	S	M	S	S	M	M	M
CO3	S	S	S	M	S	S	S	M	S	M
CO4	S	S	S	S	S	S	S	M	M	M
CO5	S	M	S	S	S	S	S	M	M	S

CO-PO Mapping (Course Articulation Matrix)

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

Level of Correlation between PSO&CO

404-M.Sc., CHEMISTRY

23PCHEEC11-ORGANIC REACTION MECHANISM - I

Course Learning Outcomes

Students will be able

CLO1: To recall the basic principles of organic chemistry.

CLO2: To understand the formation and detection of reaction intermediates of organic reactions.

CLO3: To predict the reaction mechanism of organic reactions and stereochemistry of organic compounds.

CLO4: To apply the principles of kinetic and non-kinetic methods to determine the mechanism of reactions.

CLO5: To design and synthesize new organic compounds by correlating the stereochemistry of organic compounds.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

Strong - 3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEC12-STRUCTURE AND BONDING IN INORGANIC COMPOUNDS AND NUCLEAR CHEMISTRY

Course Learning Outcomes

Students will be able

CO1: Predict the geometry of main group compounds and clusters.

CO2: Explain about the packing of ions in crystals and apply the radius ratio rule to predict
the coordination number of cations.

CO3: Understand the various types of ionic crystal systems and analyze their structural
features.

CO4: Explain the crystal growth methods.

CO5: To understand the principles of diffraction techniques and microscopic techniques.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEE14-2-NANO MATERIALS AND NANO TECHNOLOGY

Course Learning Outcomes

Students will be able:

CO1: To explain methods of fabricating nanostructures.

CO2: To relate the unique properties of nanomaterials to reduce dimensionality of the material.

CO3: To describe tools for properties of nanostructures.

CO4: To discuss applications of nanomaterials.

CO5: To understand the health and safety related to nanomaterial.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEE15-ELECTROCHEMISTRY

Course Learning Outcomes

Students will be able:

CO1: To understand the behaviour of electrolytes in solution and compare the structures of
electrical double layer of different models.

CO2: To predict the kinetics of electrode reactions applying Butler-Volmer and Tafel equations

CO3: To study different thermodynamic mechanism of corrosion,

CO4: To discuss the theories of electrolytes, electrical double layer, electrodics and activity coefficient of electrolytes

CO5: To have knowledge on storage devices and electrochemical reaction mechanism.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEC21-ORGANIC REACTION MECHANISM-II

Course Learning Outcomes

Students will be able:

CO1: To recall the basic principles of aromaticity of organic and heterocyclic compounds.

CO2: To understand the mechanism of various types of organic reactions.

CO3: To predict the suitable reagents for the conversion of selective organic compounds.

CO4: To correlate the principles of substitution, elimination, and addition reactions.

CO5: To design new routes to synthesis organic compounds.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEC22-PHYSICAL CHEMISTRY-I

Course Learning Outcomes

Students will be able:

CO1: To explain the classical and statistical concepts of thermodynamics.

CO2: To compare and correlate the thermodynamic concepts to study the kinetics of chemical reactions.

CO3: To discuss the various thermodynamic and kinetic determination.

CO4: To evaluate the thermodynamic methods for real gases ad mixtures.

CO5: To compare the theories of reactions rates and fast reactions.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEE24-2-GREEN CHEMISTRY

Course Learning Outcomes

Students will be able:

CO1: To recall the basic chemical techniques used in conventional industrial preparations
and in green innovations.

CO2: To understand the various techniques used in chemical industries and in laboratory.

CO3: To compare the advantages of organic reactions assisted by renewable energy sources
and non-renewable energy sources.

CO4: To apply the principles of PTC, ionic liquid, microwave and ultrasonic assisted organic
synthesis.

CO5: To design and synthesize new organic compounds by green methods.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHEE25-1-BIO-INORGANIC CHEMISTRY

Course Learning Outcomes

Students will be able:

CO1: The students will be able to analyses trace elements.

CO2: Students will be able to explain the biological redox systems.

CO3: Students will gain skill in analyzing the toxicity in metals.

CO4: Students will have experience in diagnosis.

CO5: Learn about the nitrogen fixation and photosynthetic mechanism.

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**
CO 2	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**
CO 4	**M**	**S**	**S**	**S**	**S**	**M**	**S**	**S**	**S**	**S**
CO 5	**M**	**S**	**M**	**S**	**S**	**M**	**S**	**M**	**S**	**S**

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

23PCHES26-INDUSTRIAL CHEMISTRY AND COMPUTATIONAL SOFTWARE IN CHEMISTRY

Course Learning Outcomes

Students will be able:

CO1: Students will be able to acquire knowledge of industrial fuels.

CO2: Illustrate the importance of leather and water industries.

CO3: Acquire knowledge about small scale industries.

CO4: Acquire knowledge about chemistry software's .

CO5: Acquire knowledge about techniques of molecular simulations

CO-PO Mapping (Course Articulation Matrix)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	S	S	S	S	M
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	M	S	S	S	S	M	S	S
CO4	M	S	S	S	S	M	S	S	S	S
CO5	M	S	M	S	S	M	S	M	S	S

3 – Strong, 2 – Medium, 1 - Low

Level of Correlation between PSO's and CO's

CO /PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage of Course Contribution to Pos	3.0	3.0	3.0	3.0	3.0

3 – Strong, 2 – Medium, 1 - Low

Krishnasamy College of Science, Arts & Management for Women, Cuddalore.

204. B. Sc. Chemistry(2022-2023)

22UCHEC13:GENERAL CHEMISTRY – I

COURSE OUTCOMES

- Recollect the Chemistry of Quantum Numbers.
- Discuss various types of bonding through VB & MO theories.
- Name simple Aliphatic and Aromatic Compounds and Illustrate and apply electron displacement effects and reaction mechanisms.
- Understand Gaseous state, kinds velocities.
- Elaborate the basic concepts of solid and liquid states.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	3	3	2	2	3
CO3	3	2	3	3	3
CO4	2	3	2	3	3
CO5	3	2	3	2	3

(1-Low, 2-Moderate, 3-High)

22UCHEC14:GENERAL CHEMISTRY – II

COURSE OUTCOMES

After completion of the course students will be able to understand

- How to be safe in chemistry laboratory and handle chemicals carefully.
- Concentration terms, handling burette, pipette etc and various types of titrations.
- How qualitative methods are useful in finding inorganic radicals.
- Organic analysis.
- Taking logarithm, drawing graphs.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	3
CO2	3	3	3	2	2
CO3	3	2	3	3	3
CO4	2	3	2	2	2
CO5	3	3	2	3	3

(1-Low, 2-Moderate, 3-High)

22UCHEA01: CHEMISTRY-I(ALLIED)

COURSE OUTCOMES

- Acquire thorough Knowledge about Metallurgy and Fundamental concepts in Organic chemistry.
- Acquire an idea about Chemical Kinetics.
- Identify the Importance of Nuclear chemistry and Metallic Bond.
- Acquire Knowledge on Photochemistry
- Extensive Knowledge about Fuels.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	3	3
CO2	2	3	3	3	3
CO3	3	2	3	3	2
CO4	3	3	2	2	3
CO5	3	3	3	3	2

(1-Low, 2-Moderate, 3-High)

22UCHEC23:GENERAL CHEMISTRY-III

COURSE OUTCOMES

- Compare basic properties of elements and their Compounds of s & p block elements.
- Explain the reaction mechanisms of alkanes, alkenes and alkynes and predict the products.
- Classify dienes and analyze the stability of alkanes, alkenes and cycloalkanes.
- Recollect the basic concepts of Quantum Theory and Thermodynamics.
- Calculate thermodynamic parameters using thermochemical equations and data.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	3	3	2	3	3
CO3	3	2	2	2	2
CO4	2	2	3	2	3
CO5	3	3	2	2	2

(1-Low, 2-Moderate, 3-High)

22UCHEE26-1:HEALTH CHEMISTRY

COURSE OUTCOMES

- Describe the causes, control and treatment of common diseases.
- Understand the concepts of first aid for accidents.
- Classify different organic pharmaceutical aids.
- Explain organic diagnostic agents.
- Describe diabetes, cancer and their control and treatment.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3
CO2	2	3	2	3	2
CO3	3	3	3	2	3
CO4	3	2	3	3	3
CO5	2	3	2	2	2

(1-Low, 2-Moderate, 3-High)

22UCHEA02: CHEMISTRY – II(ALLIED)

COURSE OUTCOMES

- Ability to compare the properties of Carbon, Nitrogen and Oxygen elements and their compounds.
- To compare the properties of Halogens and their compounds.
- Apply Huckel's rule and predict the Aromaticity of compounds.
- To discuss the mechanism of substitution and elimination reactions of aliphatic and aromatic compounds.
- Ability to explain the thermodynamic second law and predict the spontaneity of a process.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	3	3
CO2	2	3	3	3	3
CO3	3	2	3	3	2
CO4	3	3	2	2	3
CO5	3	3	3	3	2

(1-Low, 2-Moderate, 3-High)

22UCHEC33:GENERAL CHEMISTRY – IV

COURSE OUTCOMES

- Ability to compare the properties of Carbon, Nitrogen and Oxygen elements and their compounds.
- To compare the properties of Halogens and their compounds.
- Apply Huckel's rule and predict the Aromaticity of compounds.
- To discuss the mechanism of substitution and elimination reactions of aliphatic and aromatic compounds.
- Ability to explain the thermodynamic second law and predict the spontaneity of a process.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	3	3
CO2	3	3	3	3	3
CO3	3	3	2	2	3
CO4	3	2	3	3	2
CO5	2	2	3	2	3

(1-Low, 2-Moderate, 3-High)

22UCHEE36-1:AGRICULTURAL CHEMISTRY

COURSE OUTCOMES

- Understand the basics of soil.
- Classify and explain plant nutrients and fertilizers
- Differentiate fertilizers and manures.
- Explain the classification of pesticides.
- Describe the Fungicides and herbicides.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3
CO2	3	2	2	2	3
CO3	3	3	3	3	2
CO4	3	3	3	3	3
CO5	2	2	2	2	3

(1-Low, 2-Moderate, 3-High)

22UCHEN37: MEDICINAL CHEMISTRY

COURSE OUTCOMES

- Understand the composition of blood and biochemical analysis of Urine and Serum
- Gain knowledge about uses and side effects of Antibiotics, Antipyretics, Analgesics and tranquilizers.
- Explain the causes, symptoms and treatment of Blood pressure, Diabetes, Cancer and AIDS.
- Classify and understand the sources and diseases caused by deficiency of Vitamins.
- Analyse the therapeutic importances of Indian Medicinal plants

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3
CO2	3	2	2	2	3
CO3	3	3	3	3	2
CO4	3	3	3	3	3
CO5	2	2	2	2	3

(1-Low, 2-Moderate, 3-High)

22UCHEC43: GENERAL CHEMISTRY – V

COURSE OUTCOMES

- Assess the compounds of noble gases.
- Describe the preparations, properties of carboxylic acids and amines.
- Justify the concept of equilibrium constant and free energy change.
- Analyse various applications of second law of thermodynamics.
- Illustrate the types of alcohols and their chemical properties.

OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	2
CO2	3	3	3	3	3
CO3	3	2	3	2	3
CO4	2	2	3	3	3
CO5	3	3	2	2	2

(1-Low, 2-Moderate, 3-High)

22UCHES48:FOOD CHEMISTRY

COURSE OUTCOMES

- Describe the food and cereals.
- Analyse sugar, vegetable and fruits.
- Know about beverages, appetizers.
- Explain food preservation.
- Analyse food additives.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	3	2	3	3	2
CO3	3	2	2	3	3
CO4	3	3	3	2	2
CO5	3	3	3	3	3

(1-Low, 2-Moderate, 3-High)

22UCHEN47: CHEMISTRY IN TODAY'S WORLD

COURSE OBJECTIVES

- To help students visualize the importance of chemistry in today's world.
- To know artificial sweetening agents and food preservatives.
- To know about water treatment and industrial materials.
- To understand the crux of chemistry in the field of cosmetology and its various implications.
- To create awareness regarding fertilizers and manuring.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3
CO2	3	2	2	2	3
CO3	3	3	3	3	2
CO4	3	3	3	3	3
CO5	2	2	2	2	3

(1-Low, 2-Moderate, 3-High)

22UCHEC51: INORGANIC CHEMISTRY- I

COURSE OUTCOMES

- Explain the tendency, catalytic properties of transition metals and their industrial applicationsof their compounds
- Name the coordination compounds using IUPAC nomenclature and explain the various types of Isomerism exhibited by coordination complexes.
- Discuss the various theories of coordination compounds.
- Explain the mechanism and rates of reactions of coordination complexes.
- Assess the nature and types of solids and explain the band theory and defects of solids

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	2
CO2	2	3	2	3	3
CO3	3	3	3	3	3
CO4	3	3	2	2	2
CO5	2	2	3	2	2

(1-Low, 2-Moderate, 3-High)

22UCHEC52:ORGANIC CHEMISTRY – I

COURSE OUTCOMES

- Elucidate the structures of saccharides.
- Assign the stereo configuration of Organic Compounds and conformation of cyclohexanes.
- Explain the preparation, properties and uses of Nitro alkanes and amines.
- Explain the mechanism of Organic named reactions.
- Explain the synthesis and properties of five and six membered heterocyclic compounds and condensed heterocyclic compounds.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3
CO2	3	2	3	3	2
CO3	3	2	2	3	3
CO4	2	3	3	3	3
CO5	3	2	2	2	2

(1-Low, 2-Moderate, 3-High)

22UCHEC53:PHYSICAL CHEMISTRY-I

COURSE OUTCOMES:

- Differentiate the ideal and non-ideal solutions.
- Uses the Lever rule for two-
- Recognize, use and compare the colligative prope
- Understand the theories on weak and strong electroly
- Gain knowledge about various applications of conductance measurements.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	3
CO2	2	3	3	2	3
CO3	3	2	2	3	3
CO4	3	2	3	2	2
CO5	3	2	2	3	3

(1-Low, 2-Moderate, 3-High)

22UCHEC54:ANALYTICAL CHEMISTRY

COURSE OUTCOMES:

- Students can handle the instruments with the proper analytical knowledge along with proper safety measures.
- Recommend proper method for the separation of mixture of compounds.
- Describe the basic principles and procedures of various chromatographic techniques
- Apply the principles of gravimetric analysis to perform gravimetric experiments.
- Use thermogravimetric and Electrochemical Techniques analysis and examine the themogram and voltammogram respectively.

.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3
CO2	2	3	2	3	2
CO3	3	2	3	2	3
CO4	3	3	2	3	2
CO5	2	2	3	2	3

(1-Low, 2-Moderate, 3-High)

22UCHEE58-1: POLYMER CHEMISTRY

COURSE OUTCOMES

- Describe polymers and polymerization
- Explain the properties and reactions of polymers
- Classify plastics and resins
- Understand the chemistry of commercial polymers
- Describe bio polymers and conducting polymers

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2
CO2	3	2	3	2	2
CO3	3	2	3	3	2
CO4	2	3	3	3	2
CO5	2	3	3	3	2

(1-Low, 2-Moderate, 3-High)

22UCHES59:APPLIED CHEMISTRY

COURSE OUTCOMES

1. Able to understand the concept of Petrochemicals.
2. Prepare alcohol from Molasses.
3. Understand the processes involved in paper technology.
4. Extensive Knowledge about the Explosives and Leather Chemistry.
5. Able to understand the concepts involved in tanning process.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	2	3	2	2	2
CO3	3	2	3	3	3
CO4	2	3	3	2	2
CO5	3	2	2	3	2

(1-Low, 2-Moderate, 3-High)

22UCHEC61:INORGANIC CHEMISTRY-II

COURSE OUTCOMES

- Explain the chemistry of f-block elements
- Discuss about nuclear subatomic particles and nuclear stability.
- Outline radioactivity and uses of radioisotopes.
- Discuss the role of metal ions in biological systems.
- Explain the fundamental reaction types of organometallic compounds and their applications in homogeneous catalysis.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	3
CO2	3	3	2	3	2
CO3	2	3	3	2	2
CO4	2	2	2	2	3
CO5	3	3	3	3	2

(1-Low, 2-Moderate, 3-High)

22UCHEC62: ORGANIC CHEMISTRY – II

COURSE OUTCOMES

- Explain the mechanisms of inter and intra molecular rearrangements.
- Classify amino acids and explain their preparation and properties and synthesis of Peptides.
- Differentiate between DNA and RNA.
- Explain primary and secondary structures of proteins.
- Elucidate the structures of Antibiotics, Alkaloids and Terpenoids.

OUTCOMES MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	2	3
CO2	2	3	3	2	3
CO3	3	2	2	3	2
CO4	3	3	2	2	3
CO5	2	3	3	3	2

(1-Low, 2-Moderate, 3-High)

22UCHEC63:PHYSICAL CHEMISTRY – II

COURSE OUTCOMES

- Draw electrochemical cells, labelling the anode, cathode, and directions of ion and electron mov
- Understand the Electrochemical Series and its Applications
- Recognize the chemical reaction used in a lead-acid storage battery and H2/O2 fuel cell.
- Explain the laws of photo chemistry and express the kinetics of photochemical reactions.
- Understand the concepts of symmetrical elements and basics of group theory.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	2	2	2	3	3
CO3	3	3	3	2	2
CO4	3	3	2	2	3
CO5	2	3	3	3	3

(1-Low, 2-Moderate, 3-High)

22UCHEE68-1: NANO CHEMISTRY

COURSE OUTCOMES

- Able to explain the fundamentals of nano chemistry.
- Understand the various types of nano particles.
- Able to explain the various methods of synthesis of nano particles.
- Understand the various types of nano materials.
- Able to explain the various instrumental techniques of characterization of nano particles.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	3	2	3	2	3
CO3	2	3	2	3	2
CO4	2	3	3	2	3
CO5	3	3	2	3	2

(1-Low, 2-Moderate, 3-High)

22UCHES69:DAIRY CHEMISTRY

COURSE OUTCOMES

- Able to understand the concepts of milk Processing.
- Knowledge about Milk Products.
- Wide Knowledge about Fermented Milk Products.
- Able to know the concepts involved in Pasteurization.
- Identify the changes and effect of heat on Milk.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3
CO2	2	2	2	3	2
CO3	3	3	3	2	3
CO4	3	3	3	3	3
CO5	2	2	2	3	2

(1-Low, 2-Moderate, 3-High)

404M. Sc. Chemistry(2022-2023)

22PCHEC11:ORGANIC CHEMISTRY – I

COURSE OUTCOMES

At the end of the course, the student will be able to

- Describe the concept of Stereochemistry
- Compare the stabilities of various reactive intermediates.
- Analyse and propose reasonable mechanism for Substitutions in Aliphatic molecules
- Compare the stabilities of molecules based on aromaticity
- Analyze the mechanisms of Aromatic Substitution reactions

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	3	2
CO2	2	2	3	3	3
CO3	3	2	2	3	3
CO4	2	3	3	3	3
CO5	2	2	3	3	2

22PCHEC12: INORGANIC CHEMISTRY - I

COURSE OUTCOMES

The student will be able to

- 1) Gain knowledge about the structure and bonding of Inorganic compounds and explain Isopolyacids and hetropolyacids of Vanadium, Chromium, Molybdenum and Tungsten.
- 2) Illustrates the chemistry of metal clusters and discuss polyhedral boranes, carboranes and metallocarboranes
- 3) Explain the stability constant of co-ordination complexes and stereo chemistry for co-ordination complexes
- 4) Apply the molecular orbital theory and energy level diagrams, concept of weak and strong field ligands, Jahn-Teller distortion etc.,
- 5) Illustrate the Substitution reactions of square planar complexes and electron transfer reactions

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	3
CO2	2	2	3	2	3
CO3	3	2	3	3	2
CO4	2	3	2	3	2
CO5	2	3	3	2	2

22PCHEC13: PHYSICAL CHEMISTRY –I

COURSE OUTCOMES

At the completion of this course, the students will be able to

- derive the rate equation from mechanistic data and calculation
- relate microscopic properties of molecules with macroscopic thermodynamic observables
- gain knowledge about the Surface Chemistry and its mechanisms.
- apply group theory for molecules like water, ethylene, butadiene etc…
- imbibe basic aspects of spectroscopy and apply to poly atomic molecule

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	2	2
CO2	3	3	3	3	2
CO3	2	3	2	2	2
CO4	2	3	2	2	3
CO5	2	2	2	3	3

22PCHEE16-1: POLYMER CHEMISTRY

OURSE OUTCOMES

On completion of the course, students should be able to

- Understand the basic concept of polymers and the chemistry of organic and inorganic polymers
- Understand the kinetics and mechanism of various polymerization techniques.
- Choose an appropriate analytical method to characterize polymers.
- Select an appropriate moulding technique to process a particular polymer.
- Realize the importance of advanced polymers.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	3	3	2	3	2
CO3	2	3	3	2	3
CO4	2	3	3	2	2
CO5	3	2	2	3	2

22PCHEO17-1: FOOD CHEMISTRY

COURSE OUTCOMES

- Students will be able to acquire knowledge of fermented food.
- Acquire knowledge about packaged drinking water.
- Illustrate the importance of beverages and its types.
- Acquire knowledge about food adulteration.
- Illustrate the importance of food preservative.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	3
CO2	3	2	3	3	2
CO3	2	3	2	3	3
CO4	2	2	3	2	2
CO5	3	3	3	2	3

22PCHEC21: ORGANIC CHEMISTRY – II

COURSE OUTCOMES

At the end of the course the student will be able to,

- Compare the stability and reactivity of different conformers of Cyclohexane derivatives
- Solve problems based on additions to Carbon – Carbon and Carbon – Hetero atom multiple bonds.
- Propose mechanisms and predict the products with proper stereochemistry for various elimination reactions.
- Have a thorough knowledge of using proper reagents for specific Oxidation and Reduction reactions.
- Apply HSAB principle to Organic reactions and have sufficient knowledge on reaction kinetics and mechanism.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	3
CO2	2	3	2	3	3
CO3	3	3	2	2	3
CO4	2	2	3	3	2
CO5	3	2	2	3	2

22PCHEC22: INORGANIC CHEMISTRY – II

COURSE OUTCOME

At the end of the course students will be able to

- Explain the solid-state structures and structural defects
- Explain the nuclear models, Categorize the nuclear reactions, radio analytical techniqus.
- Describe chemistry of lanthanides and actinides.
- Analyze and interpret the photo inorganic chemistry reactions.
- Describe the chemistry of bioinorganic complexes.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	2
CO2	2	3	2	2	3
CO3	3	2	3	3	2
CO4	3	2	2	2	2
CO5	2	2	3	3	3

22PCHEC23: PHYSICAL CHEMISTRY - II

COURSE OUTCOMES

At the completion of this course, the students will be able to

- Identify the application of quantum chemistry in MO and VB theories and construct hybridizationschemes.
- Derive the equation for one dimensional and two-dimensional boxes.
- Identify the photo chemical reactions
- Construct the phase diagram for the Three components system.
- Illustrate the use of catalysis in reactions.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	2
CO2	3	3	2	2	3
CO3	2	3	3	3	2
CO4	2	3	2	2	3
CO5	2	3	2	3	2

22PCHEE26 -1: GREEN CHEMISTRY

COURSE OUTCOMES

- Define green chemistry and explain basic principles
- Discuss and appraise green reagents and microwave assisted green synthesis
- Analyse the synthetic applications of ultra sound assisted green synthesis and ionic liquids.
- Apprise the advantages and applications of phase transfer catalysis in organic synthesis.
- Suggest crown ethers for different reactions in organic synthesis.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	3
CO2	3	3	3	2	2
CO3	2	2	2	2	2
CO4	2	3	2	3	3
CO5	3	2	2	2	2

22PHUMR27: HUMAN RIGHTS

COURSE OUTCOMES

At the end of the course, the student

- will have knowledge about the conceptual background of Human Rights.
- can apprise on International Human Rights norms and mechanisms.
- can understand the emerging dimensions of Human Rights in international forum.
- can explain about the Third Generation Human Rights
- can discusses about Right to Clean Environment.

OUT COME MAPPING

CO/PO	PO				
	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	2
CO2	1	2	2	3	3
CO3	2	2	3	2	2
CO4	2	3	3	2	3
CO5	2	2	2	3	3

***1-Low *2-Medium *3-Strong**

22PCHE31: ORGANIC CHEMISTRY- III

COURSE OUTCOMES

The student will be able to

- Visualize the importance of UV-Visible and IR spectroscopy.
- Acquire knowledge of vibrational transition and identify functional groups
- Apply the concept of Mass spectroscopy to different compounds
- Elucidate the structure of organic compounds using NMR
- Solve photochemical and pericyclic problems

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	2
CO2	2	3	2	3	3
CO3	3	2	2	3	3
CO4	2	3	3	2	3
CO5	3	2	3	3	2

22PCHE32: INORGANIC CHEMISTRY- III

COURSE OUTCOMES

The student will be able to

- Illustrate the different types of reaction of organo metallic compounds and discuss the various catalysis processes in organo metallic chemistry.
- Analyze and interpret the IR, Raman and NMR spectra of Inorganic compounds and coordination complexes
- Apply Mossbauer and photo electron spectroscopic data for the structural classification of inorganic compounds.
- Describe the principle and applications of ESR and NQR for inorganic molecules.
- Explain about the structure and functions of metalo enzymes and role of trace elements in biological systems.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	2
CO2	2	3	3	3	3
CO3	2	2	2	2	2
CO4	2	2	2	3	3
CO5	3	3	2	2	2

22PCHE33: PHYSICAL CHEMISTRY-III

COURSE OUTCOMES

At the completion of this course, the students will be able to

- Calculate the thermodynamic and kinetic properties
- Relate microscopic properties of molecules with macroscopic thermodynamic observables
- Derive the rate equation from mechanistic data
- Utilise the Raman and NMR spectroscopy
- Apply the ESR and Mossbauer spectroscopy for various compounds.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	2	2
CO2	2	3	3	3	2
CO3	3	2	2	3	3
CO4	3	3	2	2	2
CO5	2	2	3	2	3

22PCHE34: SCIENTIFIC RESEARCH METHODOLOGY

COURSE OUTCOMES

- The students will be able to acquire knowledge of Literature survey
- Acquire knowledge about thesis writing.
- Acquire knowledge about Research work.
- Identify the importance of errors involved chemical analysis.
- Illustrate the importance of online browsing of literature.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**3**	**2**	**3**
CO2	**2**	**2**	**2**	**2**	**2**
CO3	**3**	**3**	**2**	**3**	**2**
CO4	**2**	**3**	**2**	**2**	**3**
CO5	**2**	**2**	**3**	**3**	**2**

22PCHEO37-2: DAIRY CHEMISTRY

COURSE OUTCOME

- Identify the importance of dairy chemistry.
- The students will be able to understand the nutrients of milk.
- Acquire knowledge of milk nutrients.
- Appreciate the importance of butter and cheese.
- Acquire knowledge of ice – creams and milk products.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**2**	**2**	**3**
CO2	**2**	**3**	**2**	**3**	**2**
CO3	**2**	**2**	**3**	**2**	**2**
CO4	**3**	**2**	**3**	**2**	**3**
CO5	**2**	**3**	**3**	**2**	**2**

22PCHEC41: ORGANIC CHEMISTRY- IV

COURSE OUTCOMES

The student will be able to

- Develop problem solving skills requiring application of chemical reaction.
- Use important reagents in the modern synthetic methods
- Acquire knowledge of terpenes and alkaloids.
- Elucidate the structure of proteins and nucleic acids.
- Solve problems related to rearrangements.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2
CO2	3	3	3	3	3
CO3	2	2	3	3	3
CO4	3	3	2	2	3
CO5	2	2	3	2	2

22PCHEC42: PHYSICAL CHEMISTRY- IV

COURSE OUTCOMES

At the end of this course, the students will be able

- To analyse the fundamental concepts of atoms and molecules and their arrangements indifferent energy levels by statistical approach.
- To apply the mathematical concepts in chemical systems at molecular level.
- To predict the application of electrical energy in chemical phenomena.
- To understand the laser devices and applications.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	3
CO2	2	2	3	3	2
CO3	3	2	2	2	2
CO4	2	3	2	3	3
CO5	2	2	3	2	3

22PCHEP46-1: BIOINORGANIC CHEMISTRY

COURSE OUTCOMES

- To enable the students to understand the importance of trace elements in biological system and also the toxicity of metal ions
- To enable the students to understand the importance of transport heme iron proteins and non heme oxygen carriers
- To enable the students to understand the structure and functions of various types of metallo enzymes and the importance of transport and storage protein in biological systems.
- To enable the students to understand the structure and functions of nitrogenase enzyme and structure of chlorophyll
- To enable the students to understand the importance of medicinal bioinorganic chemistry and chelation therapy.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3
CO2	2	3	3	2	2
CO3	2	2	2	3	2
CO4	3	2	2	3	2
CO5	2	3	2	2	3