Annai Hajira Women's College

Melapalayam, Tirunelveli-05

Department of Chemistry

Syllabus 2021 - 2022

PO,PSO & CO's of Chemistry

UG-Programme – CBCS –SEMESTER PATTERN

Course Code: CH

Department of Chemistry

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UG -Programme - Course Structure under CBCS

B.Sc., Chemistry

(Applicable to the candidates admitted from the academic year 2021-2022 onwards)

FIRST SEMESTER

Subject Code	Subject Title	Lecture Hours	LAB Hours	Credits
C1TL11	Part I : Pothu Tamil Paper I	6	0	4
C2EN11	Part II : *Communicative English Paper I*	6	0	4
CMCH11	Part III Core–Paper I: Inorganic *Chemistry I*	4	0	4
CPPS11	Add on Major: *Professional English for Physical Sciences I*	4	0	4
CAMA11	Allied I Paper 1 : Algebra and Differential Equations	4	0	4
CEVS11	**Common:** *Environmental Studies*	0	0	2
CMCHP1	Major Practical I: *Inorganic Quantitative Analysis I (Volumetric Analysis I)*	0	2	2
Total	**(6T + 1P Courses)**	**24**	**2**	**24**

SECOND SEMESTER

Subject Code	Subject Title	Lecture Hours	LAB Hours	Credits
C1TL21	Part I : Pothu Tamil Paper II	6	0	4
C2EN21	Part II : Communicative English Paper II	6	0	4
CMCH21	Core Paper III : Organic Chemistry I	4	0	4
CPPS21	Core Paper IV: Add on Major: Professional English for Physical Sciences II	4	0	4
CMCHP2	Major Practical II : Inorganic Quantitative (Volumetric) Analysis II	0	2	2
CAMA21	Allied I Paper 2 : Vector Calculus and Fourier Series	4	0	4
CVBE21	Part IV (Common) : Value Based Education	2	0	2
Total	**(6T + 1P Courses)**	**26**	**2**	**24**

THIRD SEMESTER

Subject Code	Subject Title	Lecture Hours	LAB Hours	Credits
C1TL31	Part I: *Pothu Tamil – Paper III*	6	0	4
C2EN31	Part II: *General English – Paper III*	6	0	4
CMCH31	Core – Paper V: *Physical chemistry I*	4	0	4
CSCH32	Skill Based Core I: *Food Chemistry*	4	0	4
CCPH11	Allied II - Paper I: *Allied Physics I*	4	0	3
CYOG3A	Part IV (Common): Yoga	2	0	2
CMCHP3	Major Practical III : Organic Preparation & Inorganic Qualitative Analysis - I	0	2	2
CCPHP1	Allied Physics Practical I	0	2	2
Total	**(7T + 2P Courses)**	**26**	**4**	**25**

FOURTH SEMESTER

Subject Code	Subject Title	Lecture Hours	LAB Hours	Credits
C1TL41	Part I : Pothu Tamil Paper IV	6	0	4
C2EN41	Part II : General English Paper IV	6	0	4
CMCH41	Paper Core VI: Inorganic Chemistry II	4	0	4
CMCHP4	Major Practical IV : Inorganic Qualitative Analysis II	0	2	2
CCPH21	Allied II - Paper I: *Allied Physics I*	4	0	3
CCPHP2	Allied Physics Practical II	0	2	2
CSCH42	Part III : Skilled Based Core II: Industrial Chemistry	4	0	4
CNCS41	Non Major Elective II : HTML	2	0	2
CCEA41	Part V : Extension Activity : NCC/NSS/YRC/YWF	-	-	1
Total	**(7T + 2P Courses)**	**26**	**4**	**26**

FIFTH SEMESTER

Subject Code	Subject Title	Lecture Hours	LAB Hours	Credits
CMCH51	Part III Core VII: Organic Chemistry II	6	0	4
CMCH52	Part III Core VIII : Physical Chemistry II	6	0	4
CECH51	Part III Major Elective I : Polymer Chemistry	4	0	4
CECH54	Part III Major Elective II : Applied Chemistry	4	0	4
CMCHP5	Major Practical V : Organic Analysis & Physical Constant Determination	0	8	4
CMCHP6	Major Practical VI : Gravimetric Estimation & Inorganic Preparation			
CCSB51	Part IV (Common) : Personality Development	2	0	2
Total	**(5T + 2P Courses)**	**22**	**8**	**22**

SIXTH SEMESTER

Sub - Code	Subject Title	Lecture Hours	LAB Hours	Credits
CMCH61	Part III Core IX: Inorganic Chemistry III	5	0	4
CMCH62	Part III Core X : Organic Chemistry III	5	0	4
CMCH63	Part III Core XI : Physical Chemistry III	5	0	4
CECH62	Major Elective III : Nano Chemistry	4	0	4
CMCHP7	Major Practical VII: Physical Chemistry Experiments	0	4	2
CMCH6P	Major Project	0	7	7
Total	**(4T + 1P+ 1Project Courses)**	**19**	**11**	**25**

Programme Outcomes

On successful completion of the Undergraduate Program the graduates/ students will able to

PO1	Understand the basics of science and apply their knowledge in day-to-day life
PO2	Develop skills to carry out experiments in various branches of science.
PO3	Have enough scientific knowledge to go for higher studies and become entrepreneur
PO4	Identify, formulate and solve the technological problems of the industry
PO5	Effective written and oral communication skills especially the ability to transmit complex technical information in a clear and concise manner
PO6	Understand the issues of environmental contexts and sustainable development.
PO7	Acquire professional ethics and act in a non-biased manne

Programme Specific Outcomes

After completing B.Sc Chemistry program the students will able to

PSO1	Have sound knowledge about the fundamentals and applications of chemical and scientific theories.
PSO2	Acquire a skill for safer handling of chemicals, apparatus and instruments.
PSO3	Apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and industries.
PSO4	Develop analytical skills and problem solving skills requiring application of chemical principles.
PSO5	Acquire the ability to synthesis, separate and characterize compounds using laboratory and instrumentation techniques.
PSO6	To provide the professional service to industry, research organization and institutes.

FIRST SEMESTER

CMCH11- Core I: Inorganic Chemistry I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Recall the structure of an atom and explain the theories and concepts that go with it.	K1
CO2	Identify and classify the elements, as well as knowing the periodic properties.	K3, K2
CO3	Discuss the theories of chemical bonding and how they are used to explain the structure and properties of various molecules.	K6, K1
CO4	Compare the general characters of s and p block elements.	K2
CO5	Classify the types of volumetric analysis and choose suitable indicators for various titrations.	K4, K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of COs with POs & PSOs:

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	S	L	S	S	S	L	L	S	L	M	M	L	S
CO2	S	M	S	M	S	M	L	S	L	M	S	M	M
CO3	S	M	S	S	M	L	L	S	M	L	S	L	S
CO4	S	M	M	S	S	M	L	S	M	S	S	M	S
CO5	S	S	S	S	M	S	L	M	S	S	M	S	M

CMCHP1- Inorganic Quantitative Analysis I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Apply the principles of volumetric analysis to determine the concentration of acids/bases/ions	K3
CO2	Determine volumetrically the amount of acids and bases in the given solution	K5
CO3	Estimate the amount of inorganic compounds using permangnometric titrations	K6

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of COs with POs & PSOs with COs :

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	S	S	M	M	L	M	S	S	M	L	M
CO2	S	S	S	S	M	S	L	S	S	S	L	M	S
CO3	S	S	S	S	M	S	L	S	S	S	M	L	M

S – Strongly Correlated ; M – Medium Correlated ; L – Low Correlated

SECOND SEMESTER

CMCH21- Core Paper III : Organic Chemistry I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Recall basic concepts of organic chemistry and Nomenclatureof organic compounds.	K1
CO2	Analyse different types of organic reactions and apply their mechanisms to various reaction.	K4, K3
CO3	Discuss the structure and relative reactivities of various carbonyl compounds.	K6, K2
CO4	Outline the preparation and discuss the properties and uses of organometallic and sulphur containing organic compounds	K2, K6
CO5	Explain the theories and conformational isomers of acyclic/cyclic compounds.	K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of COs with POs & PSOs:

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	M	M	S	M	S	L	L	S	L	L	M	L	S
CO2	S	S	S	S	L	M	L	S	M	S	S	M	M
CO3	S	S	S	M	M	S	L	S	S	M	M	L	S
CO4	S	S	S	S	L	S	L	S	S	S	M	S	M
CO5	S	M	S	M	M	M	L	S	L	M	S	M	S

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CMCHP2-Inorganic Quantitative (Volumetric) Analysis II

COURSE OUTCOMESS		COGNITIVELEVEL
CO1	Outline the principles of Iodometric, dictrometric andcomplexometric titrations	K2
CO2	Estimate Iodometrically the amount of Cu^{2+} and dichromate \	K6
CO3	Determine the concentrations of metal ions (Zn^{2+}, Pb^{2+},Mg^{+} andCu^{2+}) using complexometric titrations	K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of COs with POs & PSOs:

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	S	M	M	S	M	S	S	M	M	L	S
CO2	S	S	S	S	M	S	M	S	S	S	S	M	M
CO3	S	S	S	M	S	S	M	S	S	S	M	M	S

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THIRD SEMESTER

CMCH31- Core V: Physical Chemistry I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Compare the behaviour of ideal and real gases.	K2
CO2	Develop knowledge on the concept of vapour pressure and Distinguish ideal solutions from non ideal solutions	K3, K4
CO3	Analyze the structure of crystals and explains the imperfectionsin crystal systems	K4, K5
CO4	Explain the activity of isotopes and Discuss the applications of radio isotopes	K5, K6
CO5	Discuss the kinetics of photochemical reactions and Illustrate the photo physical process	K6, K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs :

CO/PO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	L	S	M	M	L	S	M	S	M	S	S
CO2	S	S	S	S	S	M	L	M	M	S	S	M	S
CO3	S	M	M	S	S	L	M	M	M	L	M	L	M
CO4	M	L	M	S	L	S	L	M	S	M	S	S	L
CO5	M	S	S	M	M	S	L	S	S	S	M	L	M

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CSCH32 Skill Based Core I: Food Chemistry

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Analyse the needs of foods to human and other living things.	K4
CO2	List out important Nutrients, Vitamins and Minerals to thehuman	K1
CO3	Discuss on food additives and preservative methods	K6
CO4	Explain the food adulterations and analyse adulterantsavailable in the common foods	K5, K4
CO5	Illustrate the various food regulation laws and standards.	K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of COs with POs & PSOs with COs :

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	M	S	S	M	S	M	L	M	L	M	S	L	S
CO 2	S	M	S	M	S	S	M	M	M	L	S	M	S
CO 3	S	M	S	L	M	S	L	S	M	M	S	S	M
CO 4	S	S	M	M	L	S	M	S	S	S	M	S	M
CO 5	L	S	S	M	S	S	S	S	M	L	M	S	S

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CMCHP3- Organic Preparation & Inorganic Qualitative Analysis I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	List out the compounds to be prepared and discuss the procedurefor preparations	K 1, K 6
CO2	Discuss the principle of qualitative analysis and apply the principle for the analysis of given salt.	K 6, K 3
CO3	Analyse systematically the given salt mixture and determine theacidic and basic radicals present in it.	K4, K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COswithPOs & PSOs

CO/PO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	M	S	M	M	S	M	L	S	M	S	L	M	S
CO 2	S	M	S	M	S	S	M	S	S	S	M	M	S
CO 3	M	S	S	S	M	S	M	S	S	S	M	L	S

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CACH11-Allied Course I: Allied Chemistry I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Apply theories of chemical bonding predict the geometry of molecules and their stability	K4, K6
CO2	Analyze the types of reagents and intermediates involved indifferent organic reactions.	K4
CO3	Explain the methods of preparation and uses of important drugsfor long life.	K2
CO4	Outline the preparation, properties and applications of cement,glass and explosives.	K2
CO5	Discuss the methods of preparation and importantance of drugsfor long life .	K6,K5

K1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs :

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	S	M	S	M	S	M	L	S	L	L	S	M	M
CO2	S	S	S	M	L	S	L	S	S	S	M	S	L
CO3	S	S	M	S	M	S	L	S	M	M	S	L	M
CO4	S	S	S	S	S	M	L	S	S	S	M	S	S
CO5	S	S	S	S	M	S	L	S	S	S	M	S	M

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CACHP1- Allied Chemistry Practical: Inorganic Quantitative (Volumetric) Analysis –I

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Develop the practical skill in quantitative analysis and analyze the principle of different titrations.	K3, K4
CO2	Determine the amount of acid and alkali in the given solution.	K5
CO3	Apply the principles of permangnometrictitration and estimateamount of oxalate and ferrous ammounium sulphate	K3, K6

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	S	S	S	S	L	M	S	S	S	L	M
CO2	S	S	S	M	M	S	L	S	S	S	M	M	S
CO3	S	S	S	M	L	S	L	S	S	S	M	L	S

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FOURTH SEMESTER

CMCH41- Core VI- Inorganic Chemistry II

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Explain the basic concepts of acids and bases and analyze the general characteristics of non-aqueous solvents.	K5, K4
CO2	Compare the general characteristics of d and f block elementsand select the suitable transition and inner transition elements for specific uses.	K2, K1
CO3	Elaborate the Principle and Procedure of metal extraction and identify most useful compounds of metals.	K6,K3
CO4	Discuss the various compounds of halogens and noble gases	K6
CO5	Summarize the methods to analyze data in the experiments	K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	S	L	S	M	M	S	M	S	M	L	M
CO2	S	S	S	M	S	M	L	S	L	M	S	S	M
CO3	S	S	S	M	L	S	S	S	S	S	M	M	S
CO4	S	M	M	S	M	S	L	M	S	M	L	S	M
CO5	S	M	L	S	M	L	M	M	L	M	S	M	S

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CSCH42- Skilled Based Core II: Industrial Chemistry

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Explain suitable water purification techniques.	K5
CO2	Summarize the fuels of petroleum and biofuels.	K2
CO3	Discuss the electrical insulating material and list out the commercial batteries and its uses.	K6, K1
CO4	Explain the corrosion and its prevention.	K5
CO5	Identify the chemicals used in day to day life.	K3

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO / PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	M	L	M	M	S	S	L	S	S	S	M	L	M
CO 2	S	M	S	S	M	S	L	M	S	M	L	M	S
CO 3	S	S	S	S	M	S	L	S	M	L	S	M	S
CO 4	M	S	M	L	S	M	L	S	S	M	M	L	S
CO 5	S	S	L	S	S	M	M	S	M	M	L	S	S

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CMCHP4- Major Practical IV: Inorganic Qualitative Analysis II

COURSE OUTCOMES		COGNITIVELEVEL
CO1	Define acidic and basic radicals and list out the anions andcations to be analyzed	K1
CO2	Discuss the principle of qualitative analysis and apply the principle for the analysis of given salt mixture..	K6, K3
CO3	Analyse systematically the given salt mixture and determine theacidic and basic radicals present in it.	K4, K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs

CO/PO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	S	M	L	S	M	M	L	S	M	M	S	L	M
CO 2	S	M	S	M	S	S	M	S	S	S	M	M	S
CO 3	M	S	S	S	M	S	M	S	S	S	M	L	S

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CACH21 - Allied Course II: Allied Chemistry II

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Analyse the chemical and biological applications of coordination compounds	K4
CO2	Explain the electronic effects and apply these to organic compounds.	K2, K3
CO3	Define electromotive force and Analyse its uses	K1, K4
CO4	Discuss structure and biological functions of carbohydrates , aminoacids.	K6
CO5	Analyse common diseases and important tablets used to curethe diseases.	K4, K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of COs with POs & PSOs:

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO1	PSO 2	PSO 3	PSO 4	PSO5	PSO6
CO1	S	S	S	M	M	S	L	S	S	S	M	M	S
CO2	S	M	S	L	M	M	L	S	L	L	S	M	S
CO3	S	S	M	S	S	S	L	S	M	L	S	L	M
CO4	S	S	S	M	L	S	L	S	M	M	S	L	M
CO5	S	S	M	S	M	S	L	M	L	L	M	S	L

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CACHP2-Allied chemistry practical II- Inorganic Qualitative Analysis

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Develop the practical skill on qualitative analysis	K3
CO2	Analyse the given inorganic simple salt using preliminary and other specific and confirmatory tests to report for interfering acid radicals.	K4
CO3	Illustratethe interfering radicals and to carry our systematic analysis and identifying the cations given in the simple salt.	K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 – Create

Mapping of Cos with POs & PSOs:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	S	S	M	S	L	M	M	S	S	M	L
CO2	S	S	S	S	M	S	L	S	S	S	S	L	M
CO3	S	S	S	S	M	S	L	S	S	S	S	M	M

FIFTH SEMESTER

CMCH51- Core VII: Organic Chemistry II

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Interpret the elements of symmetry and apply Cahn Ingold Prelog‟s rule.	K2K3
CO2	Discuss the geometrical configuration (Cis/Trans and /or E or Z) and know the conformational analysis	K6
CO3	Analyse the structure and reactions of Carbohydrates.	K4
CO4	Identify the aromatic organic compounds Using Huckel‟s ruleand study the electrophilic and nucleophilc substitution reactions	K3K5
CO5	List out the important heterocyclic compounds and analyse itsaromatic characters.	K1K4

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs &PSOs:

CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	M	S	S	L	M	M	M	M	L	S	M	L	M
CO2	M	S	S	L	M	M	M	S	M	L	S	M	L
CO3	S	M	M	M	S	S	S	S	S	S	M	S	L
CO4	S	S	S	M	M	M	M	S	M	M	L	S	M
CO5	L	L	S	M	S	M	S	S	S	S	L	S	M

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CMCH52- Core VIII: Physical Chemistry II

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Explain the basic concepts of thermodynamics.	K2
CO2	Identify the importance of I, II & III laws of thermodynamics	K3
CO3	Construct the phase diagram for different heterogeneous system in equilibrium.	K6
CO4	Find the applications of solubility product principle and explain different types of conductometric titrations in the laboratory to find the end point	K1 K5
CO5	Discuss the various types of molecular spectroscopy and examine the molecules to be active in UV-Visible, IR, Raman Spectroscopy.	K6 K4

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO / PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	M	S	L	M	L	M	L	L	S	M	L
CO2	S	M	S	S	M	M	M	S	M	L	S	M	S
CO3	M	S	M	S	L	S	M	S	M	M	L	S	S
CO4	S	M	S	M	M	S	L	S	S	S	M	L	M
CO5	S	S	M	S	L	S	L	S	L	L	S	M	S

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CECH51- Major Elective I: Polymer Chemistry

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Classify the polymers based on their characters and structures.	K1
CO2	Explain the mechanisms and techniques of polymerization.	K5
CO3	Discuss the applications of various organic and inorganic polymers.	K6
CO4	Summarize the advantages and disadvantages of polymer processing and degradation techniques.	K2
CO5	List out the important applications of conducting polymers ,biopolymers and explain the plastic waste management.	K1 K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	S	S	M	S	L	S	M	L	S	L	M
CO2	S	S	S	M	S	S	M	S	S	M	S	M	S
CO3	S	M	L	M	L	M	L	S	M	M	L	S	S
CO4	S	L	S	S	M	S	M	M	L	S	S	M	S
CO5	S	M	S	L	M	S	L	S	M	L	S	M	S

S – Strongly Correlated ; M – Medium Correlated ; L – Low Correlated

CECH54- Major Elective II: Applied chemistry

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Define fuels and Explain various types of fuels	K1 , K5
CO2	Choose the suitable paints, pigments, lubricants and adhesives for day to day life activities.	K3
CO3	Analyze the highly useful fertilizers, pesticides, insecticides and fungicides to improve crop yield.	K4
CO4	Discuss the oils, soaps and detergents which are necessary for human health and other activities	K6, K1
CO5	Outline the industrially important compounds for the humandevelopment activities.	K2

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs &PSOs :

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	S	M	S	L	L	M	M	L	S	M	S
CO2	S	S	S	S	M	S	L	S	M	L	M	M	S
CO3	S	M	S	S	L	M	M	M	M	S	S	L	S
CO4	S	S	M	L	S	S	L	L	M	S	S	L	M
CO5	S	L	S	S	M	S	M	M	S	M	L	S	S

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CMCHP5-Organic Analysis & Physical Constant Determination

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Examine the elements other than carbon & Hydrogen present in the organic compounds.	K4
CO2	Find the functional group present in the given organic compound	K1
CO3	Determine the physical constant for the organic subsiances	K 5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COswith POs &PSO's:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	M	S	S	S	M	M	L	M	S	S	S	S	M
CO 2	S	M	M	S	S	L	M	S	S	S	M	S	M
CO	M	S	L	S	M	S	M	M	S	S	M	L	M

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CMCHP6- Gravimetric Estimation & Inorganic Preparation

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Discuss the principle of gravimetric estimation and explain the procedure for the estimation of ions	K6, K5
CO2	Estimate the amount of metal ions available in the given Solution and compare the accuracy with other methods.	K5 , K4
CO3	Illustrate the procedure for the preparation of various metal complexes	K6

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs &PSO's:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	M	M	L	M	S	S	S	S	S	M	S
CO2	M	S	S	S	M	M	L	M	S	S	M	L	M
CO3	S	M	M	S	S	L	M	M	S	M	L	S	S

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SIXTH SEMESTER

CMCH61- Core IX Inorganic Chemistry III

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Apply the valency bond and crystal field theories to coordination compounds and analyse its spectral and magnetic properties	K3
CO2	Compare the various substitution reactions of Coordination Compounds and deduct the stability of the complexes.	K2, K4
CO3	Discuss the various organo metallic compounds and find its applications.	K6, K1
CO4	Analyse the characteristics of metal complexes using various Spectroscopy.	K4 , K5
CO5	Identify the biologically important metals & compounds andanalyze their uses.	K3, K4

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs &PSO's :

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	S	S	L	M	L	S	L	M	S	S	M
CO2	M	S	M	S	S	S	M	S	M	M	S	M	M
CO3	S	M	S	S	S	M	L	S	S	S	M	S	L
CO4	S	M	S	S	M	L	M	S	M	L	S	S	M
CO5	S	L	S	M	S	M	L	S	M	S	S	S	S

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CMCH62 - Core X Organic Chemistry III

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Understand the reaction mechanism and effect of substituentsof phenols and aromatic acid	K2
CO2	Discss various types of rearrangements.	K6
CO3	Demonstrate various theories of colour and constituents anddiscuss the structure of naphthalene and anthracene.	K2, K6
CO4	Elaborate the structure of alkaloids and terpenoids.	K6
CO5	Apply Woodward Fieser rule toconjugated dienes & α,βunsaturated ketones and IR & NMR spectroscopy to compounds	K3

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs :

CO/PO/ PSO	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO7	PS O1	PSO 2	PS O3	PS O4	PS O5	PS O6
CO1	M	M	M	M	L	M	M	S	M	S	S	S	M
CO2	M	M	L	M	M	M	M	M	L	M	S	M	S
CO3	S	S	S	L	S	S	M	S	M	M	S	S	L
CO4	S	S	S	S	M	S	S	S	M	S	M	M	S
CO5	M	S	M	S	M	M	L	S	L	M	S	S	M

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CMCH63- Core XI: Physical Chemistry III

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Explain the applications of EMF measurements.	K2
CO2	Apply the rate constant expressions for various reactions.	K3
CO3	Discuss the applications of Le Chatelier"s Principle & Hammett equation and Identify the applications of Interface chemistry	K6, K3
CO4	Classify the molecules into various groups based on group theory.	K2
CO5	Explain the principles and applications of NMR, ESR & NQR Spectroscopy.	K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	S	S	L	S	L	S	M	S	M	L	M
CO2	S	M	S	L	S	L	M	S	M	M	S	M	L
CO3	S	S	M	S	M	S	L	S	L	M	S	M	S
CO4	S	M	S	M	S	S	L	S	L	L	S	M	S
CO5	S	M	S	S	M	M	L	S	M	M	S	L	S

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CECH62- Major Elective III: Nano Chemistry

COURSE OUTCOMES		COGNITIVE LEVEL
CO1	Define the different nanosized materials and analyze thei rpeculiar properties.	K1, K4
CO2	List out the various physical, chemical and biological methods of synthesis of nanomaterials	K1, K2
CO3	Choose the suitable analytical techniques to characterizenanoparticles.	K3
CO4	Elaborate the various applications of nanomaterials and nanocomposites.	K6
CO5	Summarize the important nanocompounds and Explain their specific uses.	K2, K5

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6 - Create

Mapping of COs with POs & PSOs:

CO/PO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	M	S	L	M	M	L	S	M	M	S	L	M
CO2	S	S	S	S	M	S	M	S	S	S	M	S	M
CO3	S	S	S	S	S	M	L	S	M	L	S	S	S
CO4	S	M	M	M	S	S	L	S	M	M	L	M	S
CO5	S	M	L	M	L	M	M	S	S	S	M	L	M

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CMCHP7- Major Practical Paper VII: Physical Chemistry Experiments

COURSE OUTCOMES		COGNITIV ELEVEL
CO1	Explain the principles of physical chemistry experiments	K2
CO2	Determine the molecular weight and Critical Solution Temperature	K4
CO3	Estimate the amount of substance by conductometric and potentiometric titrations.	K6

K 1 –Remember K 2 – Understand K 3 - Apply K 4 – Analyze K 5 –Evaluate K 6-Create

Mapping of COs with POs & PSOs:

CO/PO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	S	S	S	M	S	M	L	S	M	M	L	M	S
CO2	S	M	M	S	S	M	L	S	S	S	S	L	M
CO3	M	S	L	S	M	S	M	M	S	S	M	M	S

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09/08/2021

Signature of the HoD
Head of the Department
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09/08/2021

Signature of the Principal
PRINCIPAL
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