தரமாய் கற்று வளமாய் வாழ..!

ST ALPHONSA COLLEGE
OF ARTS AND SCIENCE

An Institution run by the Syro Malabar Catholic Diocese of Thuckalay
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DEPARTMENT OF CHEMISTRY

PROGRAMME

&

COURSE OUTCOMES

2023-2024

DEPARTMENT OF CHEMISTRY

Programme Outcomes: B.Sc Chemistry

Chemistry is referred to as the Science that systematically study the composition, properties, and reactivity of matter at atomic and molecular level. The scope of Chemistry is very broad. The key areas of study in Chemistry comprise of Organic Chemistry, Inorganic Chemistry, Physical Chemistry and Analytical Chemistry. Organic Chemistry deals with study of substances containing carbon mostly, Inorganic Chemistry deals with study of all other elements/compounds/substances and their chemical properties. Physical Chemistry deals with applications of concepts, laws to chemical phenomena. Analytical Chemistry deals with identification and quantification of materials. Interdisciplinary subjects like nano-materials, biomaterials, etc and their applications from chemistry point of view added new dimension to materials Chemistry. Thus, the degree programme in Chemistry also intended to cover overlapping areas of Chemistry with Physics, Biology, Environmental Sciences. Further, a broad range of subjects such as materials chemistry, biomaterials, nanomaterials, environmental chemistry, etc., can be helpful for students to broaden the scope of their studies and hence applications from job perspective point of view. Therefore, as a part of efforts to enhance employability of graduates of Chemistry, in addition, industrial visits/industrial projects are encouraged and added to the curriculum in order to enhance better exposure to jobs/employment opportunities in industries, scientific projects and allied sectors.

After completion of three-year degree programme in Chemistry a student should be able

- To get exposed to strong theoretical and practical background in fundamental concept.
- To broaden and balance knowledge in Chemistry in addition to understanding of key chemical concepts, principles and theories

- Solve the problem and also think methodically, independently and draw a logical conclusion.
- To employ critical thinking and the scientific knowledge to design, carry out, record and analyse the results of chemical reactions
- To understand good laboratory practices and safety.
- To find out the green route for chemical reaction for sustainable development.
- To create an awareness about impact of Chemistry on the environment, society and development outside the scientific community
- To provide knowledge and skill to the students' thus enabling them to undertake further studies in Chemistry related areas or multidisciplinary areas that can be helpful for self-employment/ entrepreneurship.
- To mould a responsible citizen who is aware of most basic domain-independent knowledge, including critical thinking and communication.
- To facilitate the students in pursuing their higher studies in Chemistry, to boost their career and employment options and to apply chemistry in their everyday life.
- Applying subject knowledge for sustainable environment friendly green initiatives
- Applying subject knowledge for new research and technology
- Achieve the skills required to succeed in graduate school, professional school and the chemical industry like Cement industries, Agro product, Paint industries, Rubber industries, Petrochemical industries, Food processing industries, Fertilizer industries etc.
- To enable the graduate, prepare for national as well as international competitive examinations, especially UGC-CSIR NET and UPSC Civil Services Examination.

PO1: Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study

PO2: Communication Skills: Ability to express thoughts and ideas effectively in writingand orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and writeanalytically, and present complex information in a clear and concise manner to different groups

PO3: Critical thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development

PO 4: Problem solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations.

PO 5: Analytical reasoning: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.

PO 6: Research-related skills: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predictcause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation

PO7: Cooper ation/Team work: Ability to work effectively and respectfully with diverseteams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team

PO 8: Scientific reasoning: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences fromman open-minded and reasoned perspective.

PO 9: Reflective thinking: Critical sensibility to lived experiences, with self-awareness andreflexivity of both self and society

PO 10: Information/digital literacy: Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant informationsources; and use appropriate software for analysis of data.

PO 11: Self-directed learning: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion.

PO 12: Multicultural competence: Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.

PO 13: Moral and ethical awareness/reasoning: Ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstrating the ability to identify ethical issues related to ones work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work.

PO 14: Leadership readiness/qualities: Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smoothand efficient way.

PO 15: Lifelong learning: Ability to acquire knowledge and skills, including „learning how to learn", that are necessary for participating in learning activities throughout life, through self-paced and meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development.

DEPARTMENT OF CHEMISTRY

Course Outcomes: B.Sc Chemistry

The Chemistry course curriculum for the undergraduates includes the main areas of Chemistry: Organic, Inorganic and Physical Chemistry. The purpose of the program is to provide the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of Chemistry. The department of chemistry works towards the development of a firm foundation in the fundamentals and application of current chemical and scientific theories. The students are taught how to design and carry out scientific experiments as well as accurately record and analyse the results of such experiments. The course is so well designed that the students understand the central role of chemistry in our society and become potent enough to explore new areas of research both in chemistry and in allied fields of research and technology.

COURSE OUTCOMES

Academic Year 2023-2024

Sem	Subject No	Subject Status	Subjects	Subject Code	Contact Hrs/ Week	Credit
I	3	Core Course I	General Chemistry – I	DMCH11	5	5
	4	Core Practical I	Quantitative Inorganic Estimation and Inorganic Preparation	DMCHP1	3	3
	5	Skill Enhancement Course I	Food Chemistry	DSCH11	2	2
	6	Skill Enhancement Course	Foundation Course	DSCH12	2	2
II	9	Core Course II	General Chemistry - II	DMCH21	5	5
	10	Core Practical II	Qualitative Organic Analysis and Preparation of Organic Compounds	DMCHP2	3	3
	13	Skill Enhancement Course 2	Dairy Chemistry	DSCH21	2	2
	14	Skill Enhancement Course 3	Cosmetics and Personal Grooming	DSCH22	2	2
III	19	Core Course V	Physical Chemistry - I	CMCH31	4	4
	20	Core Practical III	Organic Preparation & Inorganic Qualitative Analysis - I	CMCHP3	2	2
	21	Allied Course I	Allied Chemistry - I	CACH11	4	3
	22	Allied Practical I	Allied Chemistry Practical - I	CACHP1	2	2
	23	Skill Based Course	Food Chemistry	CSCH3B	4	4
	25	Common	Yoga	CYOG3A	2	2
IV	28	Core Course VI	Inorganic Chemistry - II	CMCH41	4	4
	29	Core Practical IV	Inorganic Qualitative Analysis -II	CMCHP4	2	2
	30	Allied Course II	Allied Chemistry - II	CACH21	4	3
	31	Allied Practical II	Allied Chemistry Practical - II	CACHP2	2	2
	32	Skill Based Course II	Pharmaceutical Chemistry	CSCH4A	4	4
	34	Common	Computers for Digital Era	CCDE4A	2	2
	35	Extension Activity	YRC	C5EA41	-	1
V	36	Core Course VII	Organic Chemistry - II	CMCH51	6	4
	37	Core Course VIII	Physical Chemistry - II	CMCH52	6	4
	38	Major Elective I	Polymer Chemistry	CECH5A	4	4
	39	Major Elective -II	Applied Chemistry	CECH5B	4	4

	40	Major Practical V	Organic Analysis & Physical Constant determination	CMCHP5	4	4
	41	Major Practical VI	Gravimetric Estimation & Inorganic Preparation	CMCHP6	4	4
	42	Skill Based Common	Personality Development	CCSB5A	2	2
VI	43	Core Course IX	Inorganic Chemistry - III	CMCH61	5	4
	44	Core Course X	Organic Chemistry - III	CMCH62	5	4
	45	Core Course XI	Physical Chemistry - III	CMCH63	5	4
	46	Major Elective III	Nano Chemistry	CECH6B	4	4
	47	Major Practical VII	Physical Chemistry Experiments	CMCHP7	4	2
	48	Major Project	Group Project	CMCH6P	7	7

SEMESTER - I

Subject Code: DMCH11 **Subject:** General Chemistry – I

Sl. No	Course Outcome	Code
	On completion of this course, the students will be able	
1	• To recall the structure of atom and explain the theories and concepts that go with it	CHEGC1-01
2	• To identify and classify the elements, as well as knowing the periodic properties	CHEGC1-02
3	• To discuss the theories of chemical bonding and how they are used to explain the structure and properties of various molecules	CHEGC1-03
4	• To evaluate the relationship existing between electronic configuration, bonding, geometry of molecules and reactions; structure reactivity and electronic effects	CHEGC1-04
5	• To 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	CHEGC1-05

Subject Code: DMCHP1 **Subject:** Quantitative Inorganic Estimation and Inorganic Preparation

Sl. No	Course Outcome	Code
	After completion of the course, the learner shall be able to understand	
1	• The the basic principles involved in titrimetric analysis and inorganic preparations.	CHEIQEP-01
2	• The preparation of solutions of different Molarity/Normality of titrants	CHEIQEP-02
3	• The methodologies of different titrimetric analysis.	CHEIQEP-03
4	• To calculate the concentrations of unknown solutions in different ways and develop the skill toestimate the amount of a substance present in a given solution	CHEIQEP-04
5	• And plan experimental projects and execute them and assess the yield of different inorganic preparations and identify the end point of various titrations.	CHEIQEP-05

Subject Code: DSCH11 **Subject:** Food Chemistry

Sl. No	Course Outcome	Code
	On completion of this course, the students will be able	
1	• To understand the type of food	CHESFC-01
2	• To know the food adulteration and poison	CHESFC-02
3	• To know the food additives and preservation	CHESFC-03
4	• To understand the beverages and edible oil	CHESFC-04

Subject Code: DSCH12 **Subject:** Foundation Course

Sl. No	Course Outcome	Code
	On completion of this course, the students will be able	
1	• To understand the atom structure and periodic properties	CHEFC-01
2	• To gain knowledge on types of chemical bonding	CHEFC-02
3	• To explain different states of matter	CHEFC-03
4	• To understand nomenclature and isomerism in organic compounds	CHEFC-04
5	• To acquire knowledge on electromagnetic radiation and its interaction with matter.	CHEFC-05

SEMESTER -II

Subject Code: DMCH21 **Subject:** General Chemistry – II

Sl. No	Course Outcome	Code
	On completion of this course, the students will be able	
1	• To understand the concept of acids, bases and ionic equilibria; periodic properties of s and p blockelements, preparation and properties of aliphatic and aromatic hydrocarbons	CHEGC2-01
2	• To discuss the periodic properties of s and p- block elements, reactions of aliphatic and aromatic hydrocarbons and strength of acids	CHEGC2-02
3	• To classify hydrocarbons, types of reactions, acids and cobases, examine the properties s and p-block elements, reaction mechanisms of aliphatic and aromatic hydrocarbons	CHEGC2-03
4	• To explain theories of acids, bases and indicators, buffer action and important compounds of s-block elements	CHEGC2-04
5	• To. assess the application of hard and soft acids indicators, buffers, compounds of s and p- block elements and hydrocarbons.	CHEGC2-05

Subject Code: DMCHP2 **Subject:** Qualitative Organic Analysis and Preparation of Organic Compounds

Sl. No	Course Outcome	Code
	After completion of the course, the learner shall be able	
1	• To learnt the basic concept of Quantitative analysis, observe the physical state, odour, colour and solubility of the given organic compound.	CHEQAP-01
2	• To identify the presence of special elements and functional group in an unknown organic compound performing a systematic analysis.	CHEQAP-02
3	• To compare mono and dicarboxylic acids, primary, secondary and tertiary amines, mono and diamides, mono and polyhydric phenols, aldehyde and ketone, reducing and non- reducing sugars and explain the reactions behind it.	CHEQAP-03
4	• To exhibit a solid derivative with respect to the identified functional group.	CHEQAP-04
5	• To learn the laboratory safety.	CHEQAP-05

Subject Code: DSCH21 **Subject:** Dairy chemistry

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To understand about general composition of milk – constituents and its physical properties.	CHESDC-01
2	• To acquire knowledge about pasteurization of Milk and various types of pasteurization -Bottle, Batch and HTST Ultra High Temperature Pasteurization.	CHESDC-02
3	• To learn about Cream and Butter their composition and how to estimate fat in cream and Ghee	CHESDC-03
4	• To explain about Homogenized milk, flavoured milk, vitaminised milk and toned milk.	CHESDC-04
5	• To have an idea about how to make milk powder and its drying process - types of drying.	CHESDC-05

Subject Code: DSCH22 **Subject:** Cosmetics and Personal Grooming

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To know about the composition of various cosmetic products	CHEFC-01
2	• To understand chemical aspects and applications of hair care and dental care and skincare products.	CHEFC-02
3	• To understand chemical aspects and applications of perfumes and skin.	CHEFC-03
4	• To understand the methods of beauty treatments their advantages and disadvantage	CHEFC-04
5	• To understand the hazards of cosmetic products.	CHEFC-05

SEMESTER – III

Subject Code: CMCH31 **Subject:** Physical Chemistry – I

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To compare the behaviour of real and ideal gases	CHEPC1-01
2	• To develop knowledge on the concept of vapour pressure and distinguish ideal solutions from non - ideal solutions	CHEPC1-02
3	• To analyse the structure of crystals and explains the imperfections in the crystal systems	CHEPC1-03
4	• To explain the activity of isotopes and discuss the applications of radio isotopes	CHEPC1-04
5	• To discuss the kinetics of photochemical reactions and illustrate the photophysical process	CHEPC1-05

Subject Code: CMCHP3 **Subject:** Organic Preparation & Inorganic Qualitative Analysis - I

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To list out the compounds to be prepared and discuss the procedure for preparations	CHEIQA-01
2	• To discuss the principle of qualitative analysis and apply the principle for the analysis of given salt	CHEIQA-02
3	• To create an awareness on eco-friendly approach in salt analysis	CHEIQA-03
4	• To learn depth knowledge about synthesis of organic substance	CHEIQA-04

Subject Code: CACH11 **Subject:** Allied Chemistry - I

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To apply theories of chemical bonding predict the geometry of molecules and their stability	CHEAC1-01
2	• To analyze the type of reagents and intermediates involved in different organic reactions	CHEAC1-02
3	• To learn the postulates of kinetic theory of gases	CHEAC1-03
4	• To learn the preparation properties and application of cement, glass and explosives	CHEAC1-04
5	• To study the methods of preparation and importance of drug	CHEAC1-05

Subject Code: CACHP1 **Subject:** Allied Practical- I

Sl. No	Course Outcome	Code
Upon successful completion, students should be able		
1	• To apply the principles of volumetric analysis to determine the concentration of acids/bases/ions.	CHEAP1- 01
2	• To determine volumetrically the amount of acids and bases in the given solution	CHEAP1 - 02
3	• To enable the students to acquire the quantitative skills in volumetric analysis.	CHEAP1- 03

Subject Code: CSCH3B **Subject:** Food Chemistry

Sl. No	Course Outcome	Code
After studying this, the students will be able		
1	• To analyse the needs of foods to human and other living things	CHEFC- 01
2	• To list out important Nutrients, vitamins and minerals to the human	CHEFC - 02
3	• To discuss on food additives and preservative methods	CHEFC- 03
4	• To explain the food adulterations and analyse and adulterants available in the common food	CHEFC- 04
5	• To illustrate the various food regulation laws and standards	CHEFC- 05

Subject Code: CYOG3A **Subject:** Yoga

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To enable the student to have good health	CHEYO - 01
2	• To practice mental hygiene	CHEYO - 02
3	• To possess emotional stability	CHEYO - 03
4	• To integrate moral values	CHEYO - 04
5	• To attain higher level of consciousness	CHEYO - 05
6	• To use relationship-based approaches to catalyze positive change or transformation with clients	CHEYO - 06
7	• To create critical thinking skills and science-based literacy to advance the evolution of yoga therapy as an integrative health practice	CHEYO - 07

SEMESTER – IV

Subject Code: CMCHP4 **Subject:** Inorganic Chemistry - II

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To explain the basic concepts of acids and bases and analyze the general characteristics of non-aqueous solvents	CHEIC2-01
2	• To compare the general characteristics of d and f block elements and select the suitable transition and inner transition elements for specific uses	CHEIC2-02
3	• To elaborate the principle and procedure of metal extraction and identify most useful compounds of metals	CHEIC2-03
4	• To discuss the various compounds of halogens and noble gases	CHEIC2-04
5	• To summarize the methods to analyze the data in the experiments	CHEIC2-05

Subject Code: CMCHP4 **Subject:** Inorganic Qualitative Analysis

Sl. No	Course Outcome	Code
Upon successful completion students should be able		
1	• To define acidic and basic radicals and list out the anions and cations to be analyzed	CHEQAP-01
2	• To discuss the principle of qualitative analysis and apply the principle for the analysis of given mixture	CHEQAP-02
3	• To analyse systematically the given salt mixture and determine the acidic and basic radicals present in it	CHEQAP-03

Subject Code: CACH21 **Subject:** Allied Chemistry - II

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To analyse the chemical and biological application of coordination compounds	CHEAC2-01
2	• To explain the electronic effects and apply these to organic compounds	CHEAC2-02
3	• To know about electromotive force and analyse its uses	CHEAC2-03
4	• To discuss structure and biological functions of carbohydrates, aminoacids	CHEAC2-04
5	• To analyse common diseases and important tablets used to cure the diseases	CHEAC2-05

Subject Code: CACHP2 **Subject:** Allied Chemistry Practical- II

Sl. No	Course Outcome	Code
Students will gain an understand		
1	• Systematic qualitative analysis of Inorganic compounds	CHEAP2 - 01
2	• The ability to find out an acid radical and basic radical present in the given substance	CHEAP2 - 02
3	• To illustrate interfering radicals and to carry out systematic analysis and identifying the cations given in the simple salt	CHEAP2 - 03

Subject Code: CSCH4A **Subject:** Pharmaceutical Chemistry

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To list out common diseases and explain the reason	CHEPC-01
2	• To summarise the common drugs and specify its action	CHEPC-02
3	• To explain different chronic diseases and its treatment	CHEPC-03
4	• To analyse drugs action and metabolism	CHEPC-04
5	• To find the chemicals to treat health disorder and elaborate various medicinal plants to treat disease.	CHEPC-05

Subject Code: CCDE4A **Subject:** Computer for Digital Era

Sl. No	Course Outcome	Code
	On completion of this course, the students will be able	
1	• To learn the fundamentals of computers	CHECDE-01
2	• To understand the role of computers in day-to-day life	CHECDE-02
3	• To understand internet and mobile applications	CHECDE- 03
4	• To learn the concept of e-learning and MOOC	CHECDE- 04

Subject Code: Subject Code: C5EA41 **Subject:** YRC

Sl. No	Course Outcome	Code
	On completion of this course, the students will be able	
1	• To inspire the aim of Youth Red Cross among students	CHEYRC-01
2	• To create a congenial climate for peace	CHEYRC-02
3	• To encourage the young people to assist in YRC work	CHEYRC-03
4	• To initiate all forms of humanitarian activities	CHEYRC-04
5	• To emphasis peace time activities	CHEYRC-05

SEMESTER – V

Subject Code: CMCH51 **Subject:** Organic Chemistry-II

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To understand stereochemistry and conformational analysis	CHEOC2 - 01
2	• To study about amino acids and carbohydrates	CHEOC2 - 02
3	• To learn about aromaticity and aromatic substitution	CHEOC2 - 03
4	• To learn the structure and isomerism of compounds	CHEOC2 - 04
5	• To gain knowledge on heterocyclic compounds.	CHEOC2 - 05

Subject Code: CMCH52 **Subject:** Physical Chemistry-II

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To understand the basic concept of I and II law of thermodynamics	CHEPC2 - 01
2	• To understand the chemical equilibria and phase equilibria	CHEPC2 - 02
3	• To Know about conductance and its application.	CHEPC2 - 03
4	• To Acquire knowledge in various molecular spectroscopy	CHEPC2 - 04

Subject Code: CECH5A **Subject:** Polymer Chemistry

Sl. No	Course Outcome	Code
Upon successful completion, students should be able		
1	• To know the concept of polymerization and types of polymers and to understand the characteristics of polymers	CHEPOC - 01
2	• To acquire knowledge about the polymerization techniques and polymer processing	CHEPOC - 02
3	• Know the details of organic and inorganic polymers	CHEPOC - 03
4	• To understand the processing of polymer and polymer degradation.	CHEPOC - 04
5	• To have an idea about the familiarize about advances in polymers	CHEPOC - 05

Subject Code: CECH5B **Subject:** Applied Chemistry

Sl. No	Course Outcome	Code
On completion of this course, the students will be able		
1	• To gain knowledge on fuels	CHEAC - 01
2	• To study about industrially important compounds.	CHEAC- 02
3	• To acquire knowledge about basic needs of agriculture developments	CHEAC - 03
4	• To learn the substances useful for human life.	CHEAC - 04
5	• To study on match and silicate industries.	CHEAC - 05

Subject Code: CMCHP5 **Subject:** Organic Analysis & Physical Constant Determination

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To understand the various procedures in organic analysis	CHEOAP - 01
2	• To create an awareness on microscale experiments in organic chemistry practical's	CHEOAP - 02
3	• To determine physical constants of organic liquid & solid substances	CHEOAP - 03
4	• To detect N, S, halogens and test for functional groups	CHEOAP - 04
5	• To develop the skill of learning by doing	CHEOAP - 05

Subject Code: CMCHP6 **Subject:** Gravimetric Estimation & Inorganic Preparation

Sl. No	Course Outcome	Code
Upon successful completion, students should be able		
1	• To understand the various techniques in gravimetric estimation	CHEGEP - 01
2	• To get well exposure about Inorganic preparation	CHEGEP - 02
3	• To determine the identity, purity, and yield of products.	CHEGEP - 03
4	• To engage in safe laboratory practices handling laboratory glassware, equipment, and chemical reagents	CHEGEP - 04

Subject Code: CCSB5A **Subject:** Personality Development

Sl. No	Course Outcome	Code
On successful completion of the course students will be able		
1	• To understand the self-awareness	CHEPD-01
2	• To know a strong sense of wellbeing	CHEPD-02
3	• To learn the leadership and confident	CHEPD-03
4	• To understand the importance of effective communication	CHEPD-04

SEMESTER – VI

Subject Code: CMCH61 **Subject:** Inorganic Chemistry - III

Sl. No	Course Outcome	Code
On successful completion of the course students will be able		
1	• To study on nomenclature and theories of coordination compounds	CHEIC3-01
2	• To gain the knowledge on stability and mechanisms of substitution reactions of complexes.	CHEIC3-02
3	• To know various organometallic compounds and its uses.	CHEIC3-03
4	• To study the application of spectra to metal complexes.	CHEIC3-04
5	• To understand the metal ions and its compounds to biological system.	CHEIC3-05

Subject Code: CMCH62 **Subject:** Organic Chemistry- III

Sl. No	Course Outcome	Code
On successful completion of this course, students will be able		
1	• To study about the aromatic alcohols, aldehydes, ketones and acids.	CHEOC3-01
2	• To gain knowledge on rearrangements	CHEOC3-02
3	• To know the aromatic hydrocarbons and dyes.	CHEOC3-03
4	• To interpret the classification and structural elucidation of selected alkaloids and terpenes	CHEOC3-04
5	• To understand the basic concept of spectroscopy and interpretation of spectra	CHEOC3-05

Subject Code: CMCH63 **Subject:** Physical Chemistry - III

Sl. No	Course Outcome	Code
Upon successful completion, students should be able		
1	• To study on EMF and its applications	CHEPC3-01
2	• To understand the chemical equilibrium and interface chemistry	CHEPC3-02
3	• To gain Knowledge on rate of the reaction.	CHEPC3-03
4	• To understand the basics of group theory.	CHEPC3-04
5	• To acquire knowledge in NMR, ESR and NQR Spectroscopy.	CHEPC3-05

Subject Code: CECH6B **Subject:** Nano Chemistry

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To know the fundamentals of nano chemistry	CHENC-01
2	• To study the methods of preparation of nanomaterial.	CHENC-02
3	• To acquire the knowledge on characterization of nanoparticles	CHENC-03
4	• To know the important applications of nanomaterials in various fields.	CHENC-04
5	• To gain the knowledge on the nano materials and its uses.	CHENC-05

Subject Code: CMCHP6 **Subject:** Physical Chemistry Experiments

Sl. No	Course Outcome	Code
After completion of the course, the learner shall be able		
1	• To understand the breadth and concepts of Physical Chemistry	CHEPCE - 01
2	• To understand the principles of physical chemistry experiments	CHEPCE - 02
3	• To learn to find the molar mass of unknown substance	CHEPCE - 03
4	• To study the adsorption of oxalic acid on charcoal	CHEPCE - 04
5	• To lean to construct the phase diagram of two component system	CHEPCE - 05
6	• To enable the C.S.T of Phenol Water system	CHEPCE - 06
7	• To study the kinetics of acid catalysed hydrolysis	CHEPCE - 07
8	• To know to find out the strength of given substance using Conductometric and Potentiometric methods	CHEPCE - 08
9	• To know to develop skills in scientific method of planning, developing, conducting, reviewing and reporting experiments	CHEPCE - 09

Subject Code: CMCH6P **Subject:** Group Project

Sl. No	Course Outcome	Code
	This course develops	
1	• A foundation of concepts and solutions	CHEGRP - 01
2	• The planning, scheduling	CHEGRP - 02
3	• The Management of scope, cost, timing, and quality of the project	CHEGRP - 03
4	• A strong working knowledge of ethics and professional responsibility	CHEGRP - 04