Indo-American College
Not just another college
Permanently Affiliated to THIRUVALLUVAR UNIVERSITY, Vellore.
Accredited by NAAC with 'B' Grade
Recognised Under Section 2 (f) & 12 (b) of UGC Act.
T.N.Govt.G.O.MS. No.172, Higher Education Dept, dt.27-4-1998

DEPARMENT OF CHEMISTRY

PROGRAMME OUTCOMES (B. Sc)

PO1:	Describe the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in day-to-day life
PO 2:	Employ critical thinking for solving problems using basic chemistry knowledge and concepts.
PO 3:	Acquire skills in handling scientific instruments, planning and performing laboratory experiments and drawing logical inferences from the chemical experiments.
PO 4:	Analyze the given scientific data critically and systematically to draw a logical conclusion.
PO 5:	Develop various communication skills such as reading, listening, speaking, etc., to express ideas and views clearly and effectively.
PO 6:	Create an intellectual curiosity and ability to think in a scientific manner and get sensitized to social and environmental realities.
PO 7:	Develop an interest in pursuing higher studies in Chemistry and related subjects which are relevant to employment and entrepreneurship.
PO 8:	Capable of self-paced and self-directed learning aimed atpersonal developmentand for improving knowledge/skill development and reskilling.
PO 9:	Integrate the knowledge and skills developed in multidisciplinary environments and function effectively as an individual or a leader and contribute towards the needs of the society.

COURSE OUTCOME

S. No.	Course Code	Course Title	Course Outcomes
1	FCH11	General Chemistry-I	• At the end of the course, students should be able to: • LO1. Understand about atomic structure, able to write electronic configuration

			and knowing periodic properties and classification of elements. • LO2. Able to calculate the bond-order, to MO diagram of molecules. Understand about types of bonds. • LO3. Acquired knowledge about basic concepts of organic chemistry, able to written the IUPAC name of organic compounds. Get knowledge about inductive effect. • LO4.students should be able to describe the characteristics of the three states of matter and types of crystals. • LO5. Got knowledge about volumetric quantitative analysis and its calculation.
2	FPE10C	Professional English-I	• At the end of the course, students should be able to: • LO1. Develop the communication skills through the multiple tasks. Develop the English spoken skills. • LO2. Develop the writing skills about any topic and story writing. • LO3. Negotiation Strategy skills developed. • L04. Develop the presentation skill • LO5. Develop the critical thinking skill.
3	FCH21	General Chemistry-II	• At the end of the course, students should be able to: • LO1. Understand the groups of s and p block elements and its chemical and physical properties. • LO2. Derive the reaction mechanism of hydrocarbons and organic compound preparation. • LO3. Acquired knowledge about Dines of organic compounds. • L04. Understand about quantum chemistry and thermo chemistry • LO5. Recognize the basic terms of thermo dynamics and able to predict the energy changes.

4	FPE20C	Professional English-II	• At the end of the course, students should be able to: • LO1. To improve the communication competence. • LO2. Develop the persuasive communication. • LO3. Enhance the digital competence. • L04. Improve the creativity and imagination. • LO5.Develop the workplace communication and the basics of academic writing.
5	CCH31	General Chemistry-III	• At the end of the course, students should be able to: • LO1. Understand the inorganic qualitative analysis and spot test reagents, types of solvents. • LO2. Understand the comparative study of Carbon, Nitrogen and Oxygen family elements. • LO3.Got knowledge about mechanism for electrophilic substitution and aromaticity. • LO4.Recognize the mechanism for aliphatic nucleophilic substitution, elimination, aromatic nucleophilic substitution reaction. • LO5. Recognize the basic concept of second law of thermodynamics and entropy.
6	CCH41	General Chemistry-IV	• At the end of the course, students should be able to: • LO1. The students will be able to state the resemblances of elements within each main group in noble gases and clathrates. • LO2. Understanding the types of carboxylic acids and amines. • LO3. Study about alcohol, phenols and naphthols. • LO4. Known about the basic concepts of thermodynamics. • LO5. Able to understand the physical significance of third law of thermodynamics and entropy.

7	CPCH22	Practical –I Volumeteric Analysis	• At the end of the course, students should be able to: • LO1.Facilitate the learner to make solutions of various molar concentrations. • LO2.The concept of mole: converting moles into gram; converting gram into moles. • LO3.Defining concentration; dilution of solutions; making different molar concentrations. • L04.Acquired knowledge about volumetric quantitative analysis experimentally. • LO5. They were able to calculate the amount of substances from acidimetry, dichromometry, idometry, complexometry and precipitation titration.
8	FES10	Environmental Studies	• At the end of the course, students should be able to: • LO1. Understand the Green house effect, soil, water and air pollution, acid rain, etc. • LO2. Apply the knowledge to aware common people about environmental pollution. • LO3. Do more research on waste management, nuclear waste management, biodegradation of hazardous wastes etc. • LO4. How to protect the forest • LO5.students got the awareness about social act and rules.
9	FGA20	Value Education	• At the end of the course, students should be able to: • LO1. Students were got knowledge about value of education. • LO2. Students got idea about how to lead the family in society. • LO3.able to personality development. • L04. Understood about social awareness and consumer rights. • LO5. Students got idea about modem warfare and terrorism.

10	CPCH 44	Core Practical - II	• At the end of the course, students should be able to : • LO1. Able to analyze ions present in the inorganic mixture. • LO2. Able to carry out scientific semi micro qualitative analysis • LO3. Acquired knowledge about the inorganic chemical reactions • LO4. Able to prepare to inorganic compounds • LO5. Learned about handling of various chemicals and reagents.
11	CSCH 34	Water Treatment And Analysis	• At the end of the course, students should be able to : • LO1: Students well known about water and its characteristics; hard water; purification of hard water; and students got knowledge about sterilisation and disinfection of water. • LO2: students got idea about water softening methods like Clarks, lime soda, zeolite and deminerlisation; and determination of harness of water by titration method; how to calculate temporary and permanent hardness. • LO3: students got exposure of industrial water treatment methods; desalination, electrolysis, reverse osmosis; effluent treatment of water from paper industry, petrochemicals, fertilizers and power station. • LO4: acquire knowledge about water ananlysis and pollution of water from fertilizers, detergents and pesticides industries. • LO5: student got knowledge about analysis of chemical substance present in the water samples.
12	CSCH44	Food Chemistry	• At the end of the course, students should be able to: • LO1. Students able to understand about cereals and its nutritive values; sugar and sugar related products and its advantages and disadvantages. • LO2. Students well known about

			vegetables, fruits, classification, composition and its nutritive values. • LO3. Knowing the value of beverages types of beverages and its nutritive values. • LO4. Got idea about food preservation and its methods. • LO5. Acquired knowledge about food additives, food packing and food colouring.
13	CCH52	Inorganic Chemistry-I	• At the end of the course, students should be able to: • LO1. Students get understood the properties of halogens and their compounds • LO2. Acquired knowledge about co-ordination compounds and their applications and able to named co-ordination compounds • LO3.Students well understood theories of co-ordinations compounds and able to calculate the stabilization energies. • LO4.Knowing the applications about co-ordination compounds in qualitative and quantitative analysis. • LO5. Students get knowledge about solid state and applications.
14	CCH62	Inorganic Chemistry-II	• At the end of the course, students should be able to: • LO1. Acquired knowledge about nuclear chemistry and applications of radioisotopes. • LO2. Applying the knowledge of radioactivity in nuclear reactors and applications of nuclear reactions. • LO3.Understood about metallurgy process of metals from ores. • LO4. Learn about the inner transition elements. • LO5.Get knowledge about Organometallic compounds and their applications.
15	CPCH66	Core Practical –III	• At the end of the course, students should be able to: • LO1. Applying the knowledge of

			gravimetric quantitative estimations. • LO2. Students get idea about estimation of sulphate as barium sulphate using silica crucible. • LO3. Able to estimate the amount of solute present in the precipitate. • LO4. Able to estimate the barium as barium chromate using sintered crucible with accuracy • LO5.Able to carry out scientific experiments as well as accurately record and analyse the result.
16	CCH52	Organic Chemistry-I	• At the end of the course, students should be able to: • LO1. In order to study carbohydrates will develop the skills to recognize and draw particular carbohydrate structures. • To know general structural elements of cyclic monosaccharide and disaccharides and their implications for structure and function. • LO2. To be able to recognize the types of isomerism. • LO3. The reactivity and stability of an organic molecules based on structure, including conformation and stereochemistry. • LO4. The prediction of organic reaction and mechanisms. • LO5. To develop novel, efficient, convenient, selective and environmentally benign synthetic methods in organic chemistry.
17	CCH62	Organic Chemistry-II	• At the end of the course, students should be able to: • LO1.Able to know about the mechanism involved in molecular rearrangements in organic reaction and some naming rearrangements. • LO2. Learn about Aminoacids their types and properties, structure of pepties and their synthesis. • LO3.Understand about proteins and their classification, structure, types of nucleic acids and their constituents.

			• LO4. Learn about antibiotics and their therapeutic activity, Identification of alkaloids and terpenoids from plants and their structural elucidation and activity. • LO5. Able to understand about organo synthetic reagents and their preparation and synthetic application for large scale • Synthesis in industry.
18	CPCH67	Core Practical –IV Organic Qualitative Analysis And Preparations.	• At the end of the course, students should be able to: • LO1.Identification of organic compounds with one functional group like aldehydes, ketones, ester, phenol, anilide and nitrocompounds. • LO2. Able to identify mono and dicarboxylic acids, reducing and non reducing sugars, mono and diamides. • LO3.Demostrate some of the organic compounds by organic preparations. • LO4.Finally knows about how to handling the chemicals carefully. • LO5. Able to know laboratory practices and safety.
19	CCH53	Physical Chemistry –I	• At the end of the course, students should be able to: • LO1.Able to understand the solutions liquid to liquids and Nernst law and its application. • LO2.students able to explain about phase rule terms and definitions; this may included able to draw phase diagram of one and two components system. • LO3.students understood about osmotic pressure, vant hoff factor and chemical equilibrium. • L04.State the basic principles electrochemistry. Mention and explain various methods for the determination of transport number. • LO5. To understand application of conductometric titrations and concept of PH.
20	CCH63	Physical Chemistry – II	• At the end of the course, students should be able to:

			• LO1. Students able to understand cell reactions and emf. • LO2. Gain knowledge about fuel cells and storage cells. • LO3. Students Derive the integrated rate expressions for zero order, first order, second order and third order reaction. Understand theories of reaction kinetics and differentiate them. • L04. Students gain the knowledge about adsorption properties and activity of catalyst. • LO5. Clearly understood about photochemistry and its applications.
21	CPCH68	Core Practical–V Physical Chemistry Experiments	• At the end of the course, students should be able to: • LO1. Explain the principle behind the experiments performed in the laboratory. • LO2. Plan and perform experiments and interpret experimental results. • LO3. Students got idea about various heating reactions via phase rule. • L04. Students able understand the kinetics with respect to time. • LO5.students understanding about electrolytes with related experiments.
22	CECH54 A	Analytical Chemistry-I	• At the end of the course, students should be able to: • LO1. Able to minimize the laboratory calculation error. • LO2. Students got idea about purification compounds, gravimetric analysis. • LO3. Able to understand about basic principles and applications of microwave and UV spectroscopy. • LO4. Able to understand about basic principles and applications of IR spectroscopy. • LO5. Able to understand about basic principles and applications of Raman spectroscopy.
23	CSCH64A	Analytical Chemistry-II	• At the end of the course, students should be able to:

			• LO1. Able to understand about basic principles and applications of chromatography. • LO2. Able to understand about basic principles and application of polarography. • LO3. Able to understand about basic principles and applications of NMR spectroscopy. • LO4. Able to understand about basic principles and applications of MASS and ESR spectroscopy. • LO5. Able to understand about basic principles and application of TGA and DTA.
24	CECH54 A	Pharmaceutical Chemistry	• At the end of the course, students should be able to: • LO1. Students understanding of the basic pharmacological terms. • LO2. Able to diagnostic tests of diseases and disorder. • LO3 get knowledge about anti microbial drugs. • LO4 Acquired knowledge about anesthetics and analgesics. • LO5. Got knowledge about hormones and its physiological function
25	CSCH56	Applied Chemistry	• At the end of the course, students should be able to: • LO1. Students can apply the knowledge in petro chemical industries. • LO2. Students get idea about paper manufacturing industries. • LO3. Acquired knowledge about sugar industries. • LO4. Understood about explosive compounds • LO5. Got knowledge about dairy industries and products.
26	CSCH66	Agricultural And Leather Chemistry	• At the end of the course, students should be able to: • LO1. Students acquired basic knowledge of properties of soil and soil fertility • LO2. Accumulated skill for scientific research work in agricultural field.

			• LO3. Students able to understand action of pesticides. • LO4. Students got exposure about leather technology. • LO5. Students acquired knowledge about process tanning effluents treatments
27		Group Project	• Get knowledge about research and its methodology, To got idea about synthesis of compounds, Students able to understand characterization methods, Got idea about • Viva- voice.