



ST. THOMAS COLLEGE (AUTONOMOUS)
THRISSUR, KERALA - 680 001

College with Potential for Excellence
NIRF INDIA Ranking 2021 : 64th

www.stthomas.ac.in

PROGRAMME OUTCOMES
PROGRAMME SPECIFIC OUTCOMES
COURSE OUTCOMES

B.Sc Chemistry

OUTCOMES:

At the end of Under Graduate Program at St. Thomas College (Autonomous), a student will have obtained:

PO1	Critical Thinking: Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives
PO2	Effective Communication: Ability to speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology
PO3	Effective Citizenship: Ability to demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering
PO4	Environment and Sustainability: Ability to understand the issues of environmental contexts and sustainable development
PO5	Ethical Living: Ability to recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them
PO6	Social Interaction: Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings
PO7	Problem Solving and Analytical Skills: Ability to think rationally, analyze situations and solve problems adequately

Program Specific Outcomes:

At the end of B.Sc Chemistry at St. Thomas College (Autonomous), Thrissur, a student will have developed:

PSO1	To understand basic facts and concepts in chemistry. To apply the principles of chemistry.
PSO2	To appreciate the achievements in chemistry and to know the role of chemistry in nature and in society
PSO3	To familiarize with the emerging areas of chemistry and their applications in various spheres of chemical sciences and to apprise the students of its relevance in future studies.
PSO4	To develop skills in the proper handling of instruments and chemicals.
PSO5	To familiarize with the different processes used in industries and their applications. develop an eco-friendly attitude by creating a sense of environmental awareness.
PSO6	To be conversant with the applications of chemistry in day-to-day life.

Course Outcomes:

B.Sc. Botany

CHE1B01- Theoretical and Inorganic Chemistry- I

At the end of this course, a student will have developed ability to:

CO1	Enable the student to execute a research project.
CO2	Understand periodic properties of elements
CO3	Compare the properties of S and P block elements.
CO4	Apply the principles of volumetry in laboratory
CO5	Analyse the stability of different nuclei.
CO6	Aquire knowledge on the basic concept of acids and bases

B.Sc. Botany

CHE2B02- Theoretical and Inorganic Chemistry- II

At the end of this course, a student will have developed ability to:

CO1	Understand the importance and the impact of quantum revolution in science
CO2	Understand the theoretical frame work of quantum mechanics
CO3	Solve the schrodinger equation for simple syetms
CO4	Understand the quantum mechanical treatment of chemical bonding
CO5	Inculcate curiosity about microscopic world.

B.Sc. Botany

CHE3B03- PHYSICAL CHEMISTRY - I

At the end of this course, a student will have developed ability to:

CO1	Realise the charecteristics of gaseous state and its thermodynamic aspects
CO2	Correlate the concepts of classical and statistical thermodynamics
CO3	Apply symmetry operations to categorize different molecules.
CO4	Enable to solve problems systematically

B.Sc. Botany

CHE4B04- ORGANIC CHEMISTRY- I

At the end of this course, a student will have developed ability to:

CO1	Understand the basic concepts of reaction mechanism.
CO2	Understand the chemistry of hydrocarbon with their preparation and properties.
CO3	Analyse the mechanism of a chemical reaction.
CO4	Analyse the stability of different aromatic systems.
CO5	Analyse the physical and chemical properties of functionalized organic compounds.
CO6	Apply the concept of stereochemistry to different compounds.

B.Sc. Botany

CHE4B05(P)- CHEMISTRY PRACTICAL – I

At the end of this course, a student will have developed ability to:

CO1	Enable students to develop skills in quantitative analysis and preparing inorganic complexes.
CO2	Enable students to analyze potable water in their households.
CO3	Apply the principles behind quantitative analysis in laboratory.
CO4	Apply the principles of volumetric analysis in laboratory.
CO5	Enable students to develop skills in quantitative analysis and preparing inorganic complexes.

B.Sc. Botany

CHE5B06- INORGANIC CHEMISTRY – III

At the end of this course, a student will have developed ability to:

CO1	Understand basic processes of metallurgy and to analyse the merits of different alloys
CO2	To understand the applications of different inorganic polymers and non-aqueous solvents
CO3	Apply principles of microscale analysis in laboratory
CO4	Create awareness about impacts of pollution in Kerala
CO5	Enable student to practice solid waste management in households
CO6	Apply concept of hybridization to analyse structures of interhalogen and xenon compounds.
CO7	Understand the discovery and uses of noble gases

B.Sc. Botany

CHE5B07- ORGANIC CHEMISTRY – II

At the end of this course, a student will have developed ability to:

CO1	Understand the difference between alcohols and phenols.
CO2	Understand the importance of ethers and epoxides.
CO3	Understand the chemistry of amines and nitro compounds.
CO4	Apply the use organometallic compounds in the preparation of different functional groups.
CO5	Apply different reagents for the inter conversion of aldehydes, carboxylic acids and acid derivatives.
CO6	Apply the use of active methylene compounds in organic preparations.

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CHE5B08- PHYSICAL CHEMISTRY – II

At the end of this course, a student will have developed ability to:

CO1	Apply the concept of kinetics, catalysis and photochemistry to various chemical and physical processes.
CO2	Analyze the spectra of molecules
CO3	Identify unknown molecules from spectral analysis
CO4	To understand various phase transitions and its applications.

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CHE6B09- INORGANIC CHEMISTRY – IV

At the end of this course, a student will have developed ability to:

CO1	Understand the principles and applications of the instrumental methods of analysis.
CO2	Compare and contrast the properties of transition and inner transition elements. Identify the importance of beach sands of Kerala
CO3	Understand the theories of coordination chemistry. Analyze properties of complexes (eg. Color, magnetism) based on CFT.
CO4	Apply 18 electron rule to understand bonding in metal carbonyls with an understanding on organometallic compounds
CO5	Identify the importance of metals in living system.

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CHE6B10- ORGANIC CHEMISTRY – III

At the end of this course, a student will have developed ability to:

CO1	Understand the basic structure and tests for carbohydrates.
CO2	Understand elementary idea about biomolecules such as lipids, steroids, hormones and vitamins.
CO3	Understand the importance and basic components of proteins and nucleic acids.
CO4	Understand the basic structure and applications of alkaloids and terpenes.
CO5	Distinguish different pericyclic reactions.
CO6	Elucidate the structure of simple organic compounds using spectral techniques.

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CHE6B11- PHYSICAL CHEMISTRY – III

At the end of this course, a student will have developed ability to:

CO1	Understand the basic concepts of electrochemistry.
CO2	Understand the importance of colligative properties.
CO3	Analyse structure property correlation of crystalline solids

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CHE6B12- Advanced and Applied Chemistry

At the end of this course, a student will have developed ability to:

CO1	To understand the importance of nanomaterials and other new vistas in Chemistry
CO2	Understand the application of inorganic compounds in daily life.
CO3	Appreciate the uses of synthetic polymers.
CO4	Appreciate the significance of organic compounds in commodities.
CO5	Understand the basic principles of computational Chemistry

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CHE6B13(E1)- Elective 1. INDUSTRIAL CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	To understand the importance of petrochemicals.
CO2	To appreciate the importance and to familiarise the opportunities of pharmaceutical, leather and sugar industries.
CO3	To analyse the role of catalysts in industrial processes.

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CHE6B13(E2)- Elective 2. POLYMER CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Understand various classification of polymers and types of polymerization methods.
CO2	Understand the important characteristics of polymers such as average molecular weight, glass transition temperature, viscoelasticity and degradation.
CO3	Appreciate the importance of polymer processing techniques.
CO4	Characterize different commercial polymers and to understand the significance of recycling.

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CHE6B13(E3)- Elective 3. MEDICINAL AND ENVIRONMENTAL CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	To understand the importance of drugs in human health.
CO2	To understand the facts about common diseases and treatment.
CO3	To identify the presence of toxic substances in atmosphere.
CO4	To apply chemistry in treatment of water and sewage.

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CHE6B14(P)- PHYSICAL CHEMISTRY PRACTICAL

At the end of this course, a student will have developed ability to:

CO1	To enable the students to develop analytical skills in determining the physical properties (physical constants).
CO2	To develop skill in setting up an experimental method to determine the physical properties
CO3	To understand the principles of Refractometry, Potentiometry and Conductometry.

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CHE6B15(P)- ORGANIC CHEMISTRY PRACTICAL

At the end of this course, a student will have developed ability to:

CO1	Enable the students to develop analytical skills in organic qualitative analysis.
CO2	Develop talent in organic preparations to ensure maximum yield.
CO3	Apply the concept of melting or boiling points to check the purity of compounds.
CO4	Analyse and characterise simple organic functional groups.
CO5	Analyse individual amino acids from a mixture using chromatography.

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CHE6B16(P)- INORGANIC CHEMISTRY PRACTCAL-II

At the end of this course, a student will have developed ability to:

CO1	To enable the students to develop analytical skills in inorganic quantitative analysis.
CO2	To understand the principles behind gravimetry and to apply it in quantitative analysis.
CO3	To understand the principles behind colorimetry and to apply it in quantitative analysis.
CO4	To enable the students to develop analytical skills in inorganic quantitative analysis.

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CHE6B17(P)- INORGANIC CHEMISTRY PRACTCAL-III

At the end of this course, a student will have developed ability to:

CO1	To enable the students to develop skills in inorganic quanlitativeanalysis.
CO2	To understand the principles behind inorganic mixture analysis and to apply it in quanlitative analysis.
CO3	To analyse systematically mixtures containing two cations and two anions.

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CHE6B18(Pr)-- PROJECT WORK

At the end of this course, a student will have developed ability to:

CO1	To understand the scientific methods of research project.
CO2	To apply the scientific method in life situations.
CO3	To analyse scientific problems systematically.

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CHE1C01 Complementary Course I: GENERAL CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Identify important metals in biological systems.
CO2	Apply the theories of quantitative and qualitative analysis in laboratory.
CO3	Apply the theories of chemical bonding in structural determination.
CO4	Evaluate the constructive and destructive applications of nuclear reactions and identify the uses of radioactive isotopes.

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CHE2C02- Complementary Course II: PHYSICAL CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Understand the basic concepts of classical thermodynamics and spontaneity of reactions.
CO2	Realise the theories of different states of matter and their implication.
CO3	Understand the basic principles of electrochemistry.
CO4	Analyse the cell reactions and emf

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CHE3C03 Complementary Course III: ORGANIC CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Understand the basic concepts involved in reaction intermediates.
CO2	Realize the importance of optical activity and chirality.
CO3	Understand the basic structure and importance of carbohydrates, nucleic acids, alkaloids and terpenes.
CO4	Appreciate the importance of functional groups and aromatic stability.

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CHE4C04- Complementary Course IV: PHYSICAL AND APPLIED CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Understand the basic concepts behind colloidal state and nanochemistry.
CO2	Realise the importance of green chemistry in pollution prevention.
CO3	Appreciate the importance of different separation methods and spectral Techniques
CO4	Structure elucidation using spectral techniques.
CO5	Apply Chemistry to day to day life

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Course Code: CHE4C05 (P) Complementary Course V: CHEMISTRY PRACTICAL

At the end of this course, a student will have developed ability to:

CO1	Perform experiments in laboratory considering lab safety measures.
CO2	Enable the students to develop analytical and preparation skills
CO3	Apply the basic concepts of inter group separation to identify cations in a given mixture.

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CHE5D01-Open Course 1: ENVIRONMENTAL CHEMISTRY

At the end of this course, a student will have developed ability to:

CO1	Understand the basics and applications of polymer chemistry with the emphasis on 3R principle.
CO2	Evaluate the advantages and disadvantages of cleansing agents and cosmetics
CO3	Understand the basic concepts on fuels
CO4	Explain the functions of biomolecules, vitamins, enzymes, hormones and nucleic acid.
CO5	Awareness on food additives, food adulteration and emphasize the significance of local food produce.
CO6	Explain the uses of pesticides and fertilizers and their impacts on the environment.
CO7	Familiarize commonly used drugs in Kerala-benefits and its side effects.