ST. STEPHEN'S COLLEGE UZHAVOOR

(Affiliated To Mahatma Gandhi University, Kottayam)

PROGRAMME OUTCOMES

UZHAVOOR P. O, KOTTAYAM, KERALA – 686 634

Email:info@ststephens.net.in

Website: www.ststephens.net.in

Graduate Programme Outcomes – BSc/BCom/BA

Graduate Programmes offered by Mahatma University is Outcome-based, and the expected outcomes are as follows

PO1	Domain Knowledge: Enhancing the horizon of knowledge so as to enable the learners to pursue academic or professional careers.
PO2	Ideal Citizenship: Demonstrate empathetic social concern and equity-centered development as a responsible citizen, and the ability to act with an informed awareness of issues as well as participate in civic life through volunteering.
PO3	Engage in life long learning: Recognise the need and have the preparation and ability to engage in independent and life long learning in the context of an ever-changing world.
PO4	Social Interaction: Become competent, committed, conscious, creative and compassionate citizens, for and with others.
PO5	Ethics: Intercultural and ethical competency, visible through a readiness to serve humanity.
PO6	Global Competence: Integrates the knowledge of the world, and the skill of application, with the disposition to think and behave on a global stage.
PO7	Effective Communication: Develop effective communication skills and the ability to work in teams.
PO8	Environment Consciousness and Sustainability: Develop in the students an attitude of reconciliation between humans and nature which will help them become peacemakers, defenders of the poor and helpers of the environment.
PO9	Digital Competence: Ability to use techniques, skills and modern information technology tools at their study and work place.

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PROGRAMME SPECIFIC OUTCOMES
B Sc Chemistry

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Bachelor of Science in Chemistry Programmes offered by Mahatma University is Outcome-based, and the expected PSOs are as follows

PSO1	Students attain basic knowledge of the discipline including theories and techniques, concepts, and general principles.
PSO2	Enhances the ability to ask physical questions and to obtain solutions by use of qualitative and quantitative reasoning and experimental investigation.
PSO3	Read, understand and interpret information – verbal, mathematical, and graphical.
PSO4	Impart skills are required to gather information from resources and use them.
PSO5	Offer courses to the choice of the students.
PSO6	Perform experiments and interpret the results of observation.
PSO7	Provide an intellectually stimulating environment to develop the skills and enthusiasms of students to the best of their potential.
PSO8	Use Information Communication Technology to gather knowledge at will.
PSO9	Attract outstanding students from all backgrounds.

ST. STEPHEN'S COLLEGE UZHAVOOR

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COURSE OUTCOMES

UZHAVOOR P. O, KOTTAYAM, KERALA – 686 634

Email:info@ststephens.net.in

Website: www.ststephens.net.in

Name of the Programme : B. Sc Chemistry

Course Outcome

Semester	Course code	Name of the course	Outcome
I	CHICRT01	General and Analytical Chemistry	❖ Have broad outline of the methodology of science; Chemistry inparticular ❖ Understand the important analytical and instrumental tools used for practicingchemistry ❖ Learn computer-based presentation and statistical analysis of data using appropriate software ❖ Apply these skills in the analysis of experimental data in chemistrypractical.
II	CH2CRT02	Theoretical and Inorganic Chemistry	❖ Study the various atommodels ❖ Understand the important features of the quantum mechanical model of theatom. ❖ Study the periodic properties ofelements

			❖ Explain the formation of different types ofbonds ❖ Predict the geometry of simplemolecules ❖ Explain the different types of hybridization and draw shapes of simple covalentmolecules ❖ Understand the molecular orbital theory of diatomicmolecules ❖ Develop interest in various branches of inorganicchemistry. ❖ Study nuclear models and nuclearreactions.
I & II	CH2CRP01	Volumetric Analysis	❖ To develop skills for quantitative estimation using the different branches of volumetric Analysis.
III	CH3CRT03	Organic Chemistry-I	❖ Have a basic understanding about the classification and nomenclature of organic compounds, fundamentals of organic reaction mechanism, aromaticity andstereochemistry ❖ Students capable of understanding and studying

			organicreactions ❖ Have exposure to various emerging new areas of organicchemistry ❖ Develop skills required for the qualitative analysis of organiccompounds
IV	CH4CRT04	Organic Chemistry-II	❖ Learn the chemistry of common organic compounds like phenols, alcohols etc ❖ Understand and study Organic reactionmechanisms.
III & IV	CH4CRP04	Qualitative Organic Analysis	❖ To develop skills required for the qualitative analysis of organic compounds, determination of physical constants.
V	CH5CRT05	Environmental Studies and Human Rights	❖ Learn about environment and its importance inlife &environmentalconservation ❖ Understand the humanrights
			❖ Learn the chemistry of

V	CH5CRT06	Organic Chemistry-III	nitro compounds, amines, dyes, organic polymers, soaps, detergents and organicreagents. ❖ Understand and study mechanism of reactions of nitro compounds andamines. ❖ Have an elementary idea of chemotherapy, organic spectroscopy andphotochemistry ❖ Identify organic compound using UV, IR spectroscopictechniques ❖ Develop basic skills required for crystallization, distillation, solvent extraction, TLC and columnchromatography.
V	CH5CRT07	Physical Chemistry – I	❖ Study the intermolecular forces in gases andliquids ❖ Understand the dynamics of the molecules in the gases andliquids ❖ Study liquefaction ofgases ❖ Learn the structure ofsolids ❖ Study defects incrystals ❖ Studyadsorption.

V	CH5CRT08	Physical Chemistry – II	❖ Differentiate between classical and quantummechanics ❖ Study the postulates of quantum mechanics and the quantum mechanical model of the hydrogenatom ❖ Study valence bond and molecular orbitaltheory ❖ Study the principle and applications of microwave, infra-red, Raman, electronic and magnetic resonance spectroscopy. CO5: Study the fundamentals of massspectrometry ❖ Study the fundamentals ofphotochemistry
V	CH5OPT	Open course Chemistry in Everyday Life	❖ Learn about food additive, soap and detergent,cosmetics ❖ Know about chemistry in all aspects in ourlife ❖ Learn about plastics, drugs andnanomaterials

VI	CH6CRT09	Inorganic Chemistry	❖ Understand the principle of inorganic qualitativeanalysis ❖ Understand thermodynamic concepts in the extraction ofmetals ❖ Understand the applications of radioactivity andradioisotopes ❖ Understand the preparation and uses of inorganicpolymers ❖ Understand preparation and application ofnanomaterials ❖ Understand the chemistry of refractory and ceramicmaterials ❖ Understand the chemistry of the compounds of p blockelements ❖ Understand thermal and chromatographictechniques
			❖ Learn in detail the chemistry of carbohydrates, heterocyclic compounds, amino acids, proteins and nucleicacids ❖ Have a thorough idea on the

VI	CH6CRT10	Organic Chemistry-IV	structures of carbohydrates and some heterocyclic compounds. ❖ Understand the structure and functions of enzymes, proteins and nucleicacids. ❖ Study the fundamentals of terpenoids, alkaloids, vitamins, lipids andsteroids ❖ Have an elementary idea of supramolecular chemistry and Green FluorescentProteins
VI	CH6CRT11	Physical Chemistry – III	❖ Study the laws ofthermodynamics ❖ Derive Gibbs-Helmholtz, Clausius-Clapeyron, Gibbs-Duhemequations ❖ Derive the relation between Kp, Kc andKx ❖ Derive the phase rule CO5: Derive the rate equations for zero, first and second order reactions ❖ Study the phase diagrams of one and two componentsystems

VI	CH6CRT12	Physical Chemistry-IV	○ Study the behaviour of binary liquid mixtures, CST, azeotropes, colligative properties Study solubility of gases inliquids, ○ Study ionic equilibria and electrical properties of ions insolution. ○ Study the concepts of acids and bases, pH and buffersolutions
VI	CH6CRP03	Qualitative Inorganic Analysis	❖ Impart skill to students in the systematic qualitative analysis of mixtures containing two acid and two basic radicals with one interfering radical by semi-micro method.
VI	CH6CRP04	Organic preparations and basic laboratory techniques	❖ The students will develop basic skills in the techniques of crystallization, distillation, solvent extraction, TLC and column chromatography and in quantitative dilution. Enable the students in Organic preparations
		Physical	❖ To develop skills in doing experiments in kinetics,

VI	CH6CRP05	Chemistry Practical	Potentiometry and phase rule. Enable the students to prepare data analysis using spreadsheet program.

Complementary Course:

Semester	Course code	Name of the course	Outcome
I	CH1CMT01	Basic Theoretical And Analytical Chemistry	❖ This course will provide an insight into some of the fundamental concepts and principles that are very essential in the study of chemistry. ❖ To learn atomic structure, basics of thermodynamics and the concept of equilibrium. ❖ The students will understand the fundamentals of principles of analytical chemistry and chromatographic techniques.
II	CH2CMT02	Basic Organic Chemistry	❖ Understand and study Organic reactionmechanisms. ❖ Develop basic skills required for crystallization, distillation, solvent extraction, TLC and columnchromatograph y.

II		Volumetric Analysis (p)	❖ The students will get skill in the quantitative analysis by doing titrations in the different branches of volumetric analysis
III	CH3CMT03	Physical Chemistry – I (for students opted Physics as their core course)	❖ Study the behavior of binary liquid mixtures, CST, azeotropes, colligative properties Study solubility of gases inliquids, ❖ Study ionic equilibria and electrical properties of ions insolution
III	CH3CZT03	Advanced Inorganic and Organic Chemistry (For students who have opted zoology as core course)	❖ This course will promote understanding facts and concepts in inorganic and organic chemistry. ❖ This will give the students a basic understanding of nuclear chemistry and heterocyclic compounds and various types of food additives
IV	CH4CMT05	Physical Chemistry – II (for students opted Physics as their core course)	❖ Study the intermolecular forces in gases andliquids ❖ Understand the dynamics of the molecules in the gases andliquids ❖ Study liquefaction ofgases
IV		Organic Chemistry Practical (For	❖ The students will get training for systematic qualitative

		students who have opted zoology as core course)	analysis of simple organic compounds.