BSC -CHEMISTRY			
Semester I/II/III/IV/V/VI	**All Subjects / Course**	**Objective of teaching the subject (Minimum 4)**	**OUTCOMES**
SEM - I	**USCH101**	The students will be able to understand the terms and laws involved in chemical thermodynamics along with the concept of Thermochemistry.	After the completion of the course, students can opt for post graduate courses in Chemistry, Agriculture, Biochemistry, Forensic Science, Environmental Science, etc. They can also be employed in pharmaceutical industries, chemical manufacturers, forensic science department, plastic industries and agrochemical industries. B.Sc Chemistry graduates can apply for the Scientific Assistant post in the labs of Defense Research Development and Organization (DRDO), Council of Scientific and Industrial Research (CSIR) and Bhabha Atomic Research Centre (BARC). They can also apply for Common Defense Exam conducted by UPSC. Students can also attempt the IIT - JAM examination to get into prestigious institutes like IITs, NIITs and IISc.
		The students will be well acquainted withthe various ways of expressing the concentration of solutions.	
		Students will have firm foundation in the model, theory and principles of atomic structure with some basics of Quantum mechanism.	
		Students will be able to explore the periodicity of properties of elements.	
		Students will be skilled in IUPAC rule in naming aliphatic compounds	
		Students will be well versed withthe hybridization and shapes of organic compounds.	
		The students will be able to differentiate between inductive, mesomeric and resonance effect along with bond fission. They will also develop an understanding of carbocations, carbanions and free radicals.	
SEM - I	**USCH102**	Students understand the importance of chemical kinetics to determine the rate of reaction and the mechanism by which the reaction takes place. They understand the difference between order and molecularity and derive integrated rate equations for first and second order reactions.	-
		Students learn the knowledge of physical measurements like surface tension, viscosity and refractivity of liquids and their usefulness in elucidating composition and the structure of molecules.	
		Students learn to compare chemistries of main group elements and compounds of group 1 and group 2 in a logical and lucid manner. Also they understand environmental chemistry of carbon, sulphur and nitrogen.	
		Students get an insight to the basic concepts of stereochemistry like different projection formulae, their conversions, isomerism, different configurations and conformations.	

SEM II	**USCH201**	The students will acquire the knowledge of second law of thermodynamics and entropy.	-
		The students will be able to understand about the ideal gas laws, kinetic theory of gases and deviations from the same along with Van der Waals equation and Joule-Thomson effect.	
		The students will be skilled in qualitative analysis and acid-base theory	
		Students will have firm foundation in chemistry of aliphatic hydrocarbons.	
		Students will be able to explore the formation and reactions of alkenes and alkynes.	
		Students will be skilled in problem solving and critical thinking.	
SEM II	**USCH202**	Students understand the difference between acid and base, how to calculate pH of various solutions and mechanism by which buffer solutions resist change in pH.	-
		Students try to imagine the various structures and forms of solids. Also they learn about electromagnetic radiations, their wavelengths and various molecular transitions.	
		Students learn a complete new approach to molecular geometry and shapes of molecules on the basis of valence shell electron pair repulsion theory.	
		Students acquire knowledge about various redox reactions and learn to calculate the oxidation number of elements in different compounds and balance redox reactions	
		Students understand the basic chemistry of aliphatic hydrocarbons and mechanism of various electrophilic and nucleophilic addition reactions. They understand the basic concept of aromaticity and electrophilic aromatic substitution reaction with their mechanism.	
SEM - III	**USCH301**	To understand concept of Fugacity and Activity	
		To understand concept of Solubility and Solubility product of Salts	
		Student should understand the concept of ionic bond, radius ratio and calculation of lattice energy.	
		Students should gain the knowledge of valence bond theory and concept of hybridization and its application in various molecules.	

SEM - III	**USCH302**	To understand effect of temperature on the rate of reaction	-
		To understand Newton's Distribution law and its applications.	
		To understand the basic chemistry of carbonyl compound, its reaction and application	
		Students will understand reactions and reactivity of Halogenated Hydrocarbon. They will also understand about organomagnesium and organolitium compounds	
		Learners understand how compounds remain stable under uncomfortable situation.	
SEM III	**USCH303**	Students will learn about theoretical concepts in Volumetric analysis and Gravimetric analysis	-
		Students will be skilled in solving problems on concentration unit	
		Students learn about the different titrimetric methods and tools	
		Students understand different applications of UV – Visible Spectrophtometry.	
		Learners understand how to use instruments under instrumental analysis for micro – analysis to semi – micro analysis.	
SEM IV	**USCH401**	To understand concept of Reversible and Irreversible cells	-
		To understand Two - Component System.	
		Students should learn about co-ordination compounds and various terms related to it.	
		Students will gain knowledge of transition elements and properties related to it like colour, magnetic properties, etc.	
SEM IV	**USCH402**	To understand Mechanisms and kinetics of enzymes	-
		To understand crystal lattice structure of salts.	
		Gain the knowledge of preparation, reaction, basic chemistry, and application of amines, diazonium compounds and heterocyclic compounds at industry level.	
		Learners will understand the reactions and mechanism related to the functional groups carboxylic acids and sulphonic acids.	
		Students understand importance of water in ions in aqueous medium.	

SEM IV	**USCH403**	Students learn about principle, instrumentation, end point determination and applications of different techniques like potentiometry, conductometry and pH – metry.	-
		Students understand the plotting of different conductometry graphs.	
		Learners learn to calculate different types of errors and graphical representation of data.	
		Students understand separation into groups in separation methods.	
SEM V	**USCH501**	To apply the laws of chemical thermodynamics.	-
		To understand concept of colligative properties of solid.	
		To understand concept of infrared spectra of molecules.	
		To understand basic concept of nuclear chemistry	
		Learners will get insight into 4f and 5f inner transition elements and its transitions.	
SEM V	**USCH502**	Learners will understand the geometry of different crystal lattice, APF (atomic packing factor) and defects.	-
		Students understand the molecular symmetry and construction of molecular orbital diagram for diatomic and polyatomic molecules.	
		Students understand the different types of superconductors.	
		Students understand how to carry reaction without water as a medium in non – aqueous medium	
SEM V	**USCH503**	Learners will understand classification and basic mechanism of reactions. They will get knowledge about new IUPAC rules.	-
		Students will understand difference between chiral and non – chiral compounds and how new agrochemicals and heterocyclic compounds are synthesized.	
		Learner will understand the importance of twelve green principles and difference between green and traditional synthesis.	
		Students will understand the importance of UV and Mass spectroscopy and different set of reactions to determine structure of compounds.	

SEM V	**USCH504**	The students learn about importance of quality in industry, different concentration unit and preparation of solutions numerically, different techniques of sampling.	-
		The student will be able to understand about theoretical concepts in redox titrations and complexometric titrations.	
		The students learn about important methods of separation used in industry like HPLC, HPTLC and solvent extraction.	
		Students understand the effects of interaction of light with matter in optical method.	
SEM V	**USCH505**	Students learn about different types of terms related to drugs like therapeutic index, LD 50, ED50, etc. They also learn about the pharmacopoeia available for different drug analysis.	-
		Learners understand the various drugs under the class of analgesics, antipyretics and anti – inflammatory drugs.	
		Gain the knowledge of Dyes, its properties, factor responsible for colour, and its naming	
		Gain the knowledge of types of dyes, types of fiber, its history and different types of dyeing methods of various fibre	
SEM VI	**USCH601**	To understand the Lewis concept.	-
		To understand concept of molar mass of polymers	
		To understand concept of classical mechanics.	
		To use of renewable energy resources	
SEM VI	**USCH602**	Learners will understand organometallic compounds of main group metal, its synthesis and properties. They will also understand different types of catalysis and metallocenes.	-
		Learners get insight into crystal field theory, crystal field stabilization energy and crystal field splitting.	
		Students understand molecular orbital theory for coordination compounds.	
		Students learn types of reactions in metal complexes.	
		Students understand how to extract the minerals using metallurgy.	

SEM VI	**USCH603**	Learner will understand how stereochemistry plays important role in different type of organic reactions which follow different mechanism	-
		Mind of Learners would be impulse to consider different steps to study the compounds like carbohydrate and nucleic acid	
		Learners will understand the importance of polymeric product in day to day life	
		Students will get information during reactions how catalyst and reagent play important role in selectivity and transformation	
		Learners will understand how to use different spectroscopic techniques to determine structure of organic compound	
SEM VI	**USCH604**	The students study about different electroanalytical techniques like polarography and amperometry and their use in qualitative and quantitative analysis.	-
		The students learn about advanced chromatographic techniques such as GLC, GSC and ion exchange chromatography.	
		The students will get knowledge about Food science & cosmetology. They understand about composition, adulterant and analysis of Milk, Tea, Coffee & Honey. Learn about composition and analysis cosmetics	
		Students understand the effect of heat on compounds using thermal method	
SEM VI	**USCH605**	Students learn about drug discovery, design and development. They understand how a drug is metabolized in the human body. Also they understand about various chemotherapeutic agents	-
		Students learn about anti – amoebic drugs, anti – tubercular drugs, anti – neoplastic drugs, etc. Also they learn about the preparation of various drug intermediates	
		To learn about the Classification of the dyes and preparation of the various dyes by different chemical methods at the level of industry or laboratory	
		To learn about the basic properties of optical brightners, clasification, application and preparation of optical brightners and its derivative	
		To learn about different types of the theories of dyes, unit process and preparation of different types of dye intermediate	