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Every Good Work

# SACRED HEART COLLEGE (AUTONOMOUS)

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A Don Bosco Institution of Higher Education, Founded in 1951 \* Affiliated to Thiruvalluvar University, Vellore \* Autonomous since 1987

Accredited by NAAC (4<sup>th</sup> Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Name of the Course	Course Code	Name of the Program	Activities with direct bearing on Employability/ Entrepreneurship/ Skill development	Year of introduction
Organic Chemistry I	CH116	B.Sc Chemistry	<b>Employability:</b> Content: Reaction mechanism based on Alkene, alkyne. Activity: Problem Solving, writing mechanism	2021-22
Analytical Chemistry-I	CH117	B.Sc Chemistry	<b>Employability:</b> Content: Gravimetric Analysis, Error Analysis, Thermal Analysis Activity: Identify the specific and selective reagents for precipitation, Calculating and analyzing error.	2021-22

Physical Chemistry-I	CH217	B.Sc Chemistry	<b>Employability:</b> Content: Endothermic/Exothermic reaction, Hesses's Law of constant heat summation, bond dissociation energies Activity: Determine the following reactions are exothermic or endothermic reaction, Problems solving related to calculate enthalpy of formation and bond dissociation energy.	2021-22
Organic Chemistry-II	CH316	B.Sc Chemistry	<b>Employability:</b> Content: Reaction mechanism of substitution and elimination, Activity: Problem solving, Quiz based substitution, Elimination reactions	2021-22
Inorganic Chemistry-II	CH317	B.Sc Chemistry	<b>Employability:</b> Content: Nuclear Chemistry Activity: calculating the age of rocks, learning the safe disposal of radioactive materials	2021-22
Organic Chemistry-III	CH416	B.Sc Chemistry	<b>Employability:</b> Content: Spectroscopy, FTIR, Mass. Activity: Interpreting molecular weight of the molecules, assigning	2021-22

			absorption bands for various functional groups	
Inorganic Qualitative Analysis	PCH408	B.Sc Chemistry	<b>Employability:</b> Content: Preparation of Complex Activity: Preparation of Inorganic complexes and identifying the ions present in salt or solution.	2021-22
Organic Chemistry-IV	CH545	B.Sc Chemistry	<b>Employability:</b> Content: Naming reactions in carbonyl compounds, Oxidizing and reducing reagents, Reactions and mechanisms of carbonyl compounds Activity: Problem solving, choosing suitable reagents for a reaction, predicting products and intermediates. Predicting products based on various nature of the molecules.	2021-22
Inorganic Chemistry-III	CH546	B.Sc Chemistry	<b>Employability:</b> Content: Lanthanide separation Activity: Ability to separate lanthanides by precipitation, fractional crystallization and	2021-22

			solvent extraction methods.	
Physical Chemistry-III	CH547	B.Sc Chemistry	<p><b>Employability:</b>  Content: Chemical kinetics and catalysis, Enzyme catalysis  Activity: Determine the kinetics and order of simple chemical reactions and hydrolysis of sucrose in sugar factory, Find out the activation energy and effect of temperature on a reaction. Determine the <math>K_m</math> and maximum reaction velocity in enzyme catalyst reaction.</p>	2021-22
Analytical Chemistry-II	CH548	B.Sc Chemistry	<p><b>Employability:</b>  Content: Applications of spectroscopy  Activity: Interpret the various spectra and illustrating the structure of the simple organic and inorganic compounds by using the appropriate spectroscopy techniques, Analyze the factors affecting the NMR signal and the shifts of peaks in UV - Visible spectra</p>	2021-22

Elective-I Pharmaceutical Chemistry	CH549A	B.Sc Chemistry	<b>Employability:</b> Content:, Drug design, Treatment of cancer, Types of drugs. Activity: Synthesis the new drug in pharmaceutical company and analyzing their activity by SAR method, Identifying the lead compounds (drug) and using that in the treatment of appropriate diseases. Select the proper therapy to treat the cancer cells	2021-22
Elective-I Forensic Chemistry	CH549B	B.Sc Chemistry	<b>Employability:</b> Content: Detection of DNA finger Printing, identification of blood sample and Drug testing Activity: DNA testing by various methods, Identify and analyzing the blood stains, Testing the blood alcohol and poison by various analyser, different chromatography and spectroscopy techniques.	2021-22
Elective-I Bio- Inorganic Chemistry	CH549C	B.Sc Chemistry	<b>Employability:</b> Content: Metalloenzymes and metals in medicine Activity: Identify and apply the inorganic metals in various therapy like chelation and chemotherapy. Synthesis	2021-22

			of Platinum complex as anticancer drugs.	
Elective-II Applied Chemistry	CH550A	B.Sc Chemistry	<b>Employability:</b> Content: Analysis of water, soil and food products Activity: Estimate the Ca and Mg by complexometric titration, Determine the DO of water. Identify the food adulteration	2021-22
Elective-II Protein Chemistry	CH550B	B.Sc Chemistry	<b>Employability:</b> Content: Protein and enzyme catalysis Activity: Using Ramachandran Plot identifying the structure of protein, Determining the protein sequence, elucidating the mechanism of Alcohol dehydrogenase in oxidation of alcohol.	2021-22
Elective-II Cheminformatics	CH550C	B.Sc Chemistry	<b>Employability:</b> Content: Drug design and Structure searching Activity: Identify the target and validation in drug designing, Similarity of structure	2021-22

			searching in lead compound analysis	
Organic Chemistry-V	CH639	B.Sc Chemistry	<b>Employability:</b> Content: Photochemical reactions, Amino Acid catalysis, Stereochemistry of carbohydrates, Amino acid synthesis Activity: Predicting the products, assignments, Assignment, Quiz, Predict the Products	2021-22
Inorganic Chemistry-IV	CH640	B.Sc Chemistry	<b>Employability:</b> Content: Nitrogen Cycle Activity: nitrogen fixing Bio-fertilizers,	2021-22
Physical Chemistry-IV	CH641	B.Sc Chemistry	<b>Employability:</b> Content: Electromotive force Activity: Calculate the EMF of electrochemical cells and some thermodynamic quantities like free energy, enthalpy and entropy of a reaction	2021-22
Elective-III Polymer Chemistry	CH642A	B.Sc Chemistry	<b>Employability:</b> Content: Molecular Weight, Structure and Properties of Polymers, Polymer processing Activity: Determining the molecular weight of the polymer and importance of glass transition temperature.	2021-22

			Illustrate the various methods of polymer processing.	
Elective-III Industrial and Environmental Chemistry	CH642B	B.Sc Chemistry	<b>Employability:</b> Content: Pollution Activity: Determine the methods of estimating environmentally polluting molecules, Disposal of nuclear waste, nuclear disaster and its management	2021-22
Elective-III Green Chemistry	CH642C	B.Sc Chemistry	<b>Employability:</b> Content: Green Synthesis Activity: Designing the method of synthesis by using green catalyst. Developing analytical technique to minimize the toxics in chemical process	2021-22
Elective-III Materials Chemistry	CH642D	B.Sc Chemistry	<b>Employability:</b> Content: Nanomaterials and nanocrystals Activity: Synthesis the nanomaterials and apply to the various fields (optical, electrical and medical), Identifying and synthesizing the nanocrystal by various methods	2021-22



Elective-III Water Chemistry and Inorganic Materials of Industrial Importance	CH642E	B.Sc Chemistry	<b>Employability:</b> Content: Industrially important materials, Water Chemistry Activity: Applying the synthesize methods for industrially important materials (Silicate, ceramics and Cements), Demineralize the natural water and determine the quality of DM water, Chemical treatment of water for industrial and power plant boilers	2021-22
Elective-III Chemistry of Drug Design	CH642F	B.Sc Chemistry	<b>Employability:</b> Content: Computer Aided Drug Design Activity: Molecular modelling and docking process.	2021-22
Gravimetric and Organic Analysis	PCH621	B.Sc Chemistry	<b>Employability:</b> Content: Analysis of organic compounds, Estimation of ions gravimetrically Activity: Identify the functional group, Prepare derivative for the product, quantitatively measure the ion present in the compound.	2021-22
Physical Chemistry Practicals	PCH622	B.Sc Chemistry	<b>Employability:</b> Content: Viscosity, Molecular weight. Instrumentation Activity: Estimate the molecular weight of the	2021-22

			solute by Rast method, Calculate the viscosity of polymer. Know the basic working principle of various instrument like conductometer, potentiometer, polarimeter, calorimeter and pH meter.	
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