



Ready for
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 (4th 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
Abstract Algebra	M745	M Sc Maths	Employability: Contents: Algebraic Extensions, Sylow's Theorems and Galois Theory. Activities: To solve the transformations, extension fields and algebraic extensions by using Sylow's theorems using objective type test. Problem solving in Cayley digraphs of groups and Galois Theory	2021-22
Real Analysis	M746	M Sc Maths	Employability: Contents: Functions of Bounded Variation, Riemann–Stieltjes integral and Lebesgue Integral. Activities: Problem solving and MCQ Test in	2021-22

			functions of bounded variation by using Riemann–Stieltjes integral and Lebesgue Integral.	
Ordinary Differential Equations	M747	M Sc Maths	<p>Employability:</p> <p>Contents: Linear Differential Equations of Higher order, Existence and Uniqueness of Solutions and Boundary Value Problems.</p> <p>Activities: Identify and solve problems on applications of differential equations of higher order to find the power series solution. To solve the system of linear Differential equations by using existence and uniqueness of the solutions and boundary value problems.</p>	2021-22
Mathematical Statistics	M748	M Sc Maths	<p>Employability:</p> <p>Contents: Sampling Distributions, Parametric Point Estimation, Tests of Hypotheses and Design of Experiments.</p> <p>Activities: To design the given experiments by</p>	2021-22

			applying sampling theory, significance tests, estimation and testing of hypothesis.	
A1. Differential Geometry	M749A	M Sc Maths	Employability: Contents: Space curves, Local Intrinsic Properties of a Surface and Geodesics. Activities: To know space curves and their intrinsic properties of a surface and geodesics. To explore the non – intrinsic properties of surfaces.	2021-22
A3. Coding Theory	M749C	M Sc Maths	Employability: Contents: Encoding and decoding, Hamming codes and perfect codes and Codes with Latin Squares. Activities: To encode and decode the given problem using any of the coding and decoding techniques.	2021-22
Advanced Linear Algebra	M848	M Sc Maths	Employability: Contents: Linear transformations, Inner Product Spaces and Orthogonal System. Activities: To solve	2021-22

			the comprehensive test in the various aspects of Linear Algebra and problem-solving skills as a preparatory for competitive exams.	
Partial Differential Equations	M849	M Sc Maths	Employability: Contents: Partial Differential Equations of First Order and Elliptic, Parabolic, Hyperbolic Differential Equations. Activities: To enhance the problem solving skills in solving partial differential equations.	2021-22
Mathematical Analysis	M953	M Sc Maths	Employability: Contents: Fourier series, Multivariable Differential Calculus, Cauchy Theorem and Residue Calculus. Activities: To analyze the real number system, Fourier series , Fourier Integral, multivariable calculus , Cauchy Theorem and Residue Calculus.	2021-22

Topology	M954	M Sc Maths	<p>Employability:</p> <p>Contents: Topological Spaces, Compactness and Metrization Theorems.</p> <p>Activities: To enhance topological and proof writing skills of advanced mathematics. To understand the concepts of topological spaces, analyze and synthesize the proofs of connectedness and compactness.</p>	2021-22
C3. Mathematical Physics	M957C	M Sc Maths	<p>Employability:</p> <p>Contents: Electromagnetic theory and fluid mechanics, Levi-Civita tensor, transformations of vectors, Lagrangian and Hamiltonian formulations of classical mechanics with applications.</p> <p>Activities: To apply various mathematical techniques to solve problems in theoretical physics.</p>	2021-22

Complex Function Theory	M1049	M Sc Maths	<p>Employability:</p> <p>Contents: Schwarz' Lemma and Liouville's Theorem, Evaluation of Certain Integrals, Analytic Continuation and Mapping Theorems.</p> <p>Activities: To understand the Maximum Principle, Schwarz Lemma, Analytic Continuation, Representation of Meromorphic and Entire Functions and Mapping Theorems.</p>	2021-22
Difference Equations	M1051	M Sc Maths	<p>Employability:</p> <p>Contents: The Difference Calculus, The Z-transform Method and Oscillation Theory.</p> <p>Activities: To understand the process of discretization, oscillation and the asymptotic behaviour of solutions of difference equations and enhance the problem solving skills by using z-transforms.</p>	2021-22

D1. Stochastic Processes	M1052A	M Sc Maths	<p>Employability:</p> <p>Contents: Stationary Process, Markov Chains, Renewal Processes and Theory.</p> <p>Activities: To develop the basic ideas of Stochastic processes, Markov chains and Renewal process and to motivate students to do the research in these areas.</p>	2021-22
D3. Theory of Transforms	M1052C	M Sc Maths	<p>Employability:</p> <p>Contents: Fourier Series, Integral Transforms, Application of Transforms to boundary Value Problems, Z – Transform.</p> <p>Activities: To enhance the basic knowledge on principles of Fourier series and Z-Transforms. To improve the problem solving skills to solve integral problems using Transforms.</p>	2021-22
Advanced Business Statistics for Management	MBA1XXT	M Sc Maths	<p>Employability:</p> <p>Contents: Introduction to Probability and Binomial Distribution, F Test and Chi-Square Test and Time</p>	2021-22

			Series Analysis. Activities: To analyse the given data using statistical techniques, such as hypothesis testing and regression estimation.	
Applied Operations Research for Management	MBA2XXT	M Sc Maths	Employability: Contents: Linear Programming, Transportation and Assignment Problem, Replacement and Maintenance Analysis. Activities: To enhance the knowledge of quantitative methods used in linear programming problems, transportation and assignment problems, game theory, replacement and maintenance.	2021-22
Optimization Techniques	MCA2XXT	M Sc Maths	Employability: Contents: Linear Programming, Inventory Control and Queuing Theory, Decision Theory and Game Theory. Activities: To enhance the problem solving skills in linear programming	2021-22

			problems, transportation problems, inventory models, queuing models, project management and Game theory problems.	
Statistical and Numerical Methods	MCA4XXA	M Sc Maths	Employability: Contents: Large Samples and Small Samples, F Test and Chi-Square Test, Eigenvalue Problem, Interpolation, Numerical Differentiation and Integration. Activities: To apply statistical and numerical methods for solving problems in engineering and technology.	2021-22
Quantitative Aptitude Techniques	MCA5XXS	M Sc Maths	Employability: Contents: Averages, Percentage, Time and work, Time and distance, Simple interest, Compound interest and Probability. Activities: To enhance aptitude skills and to solve quantitative problems.	2021-22