



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

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**MCA**

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ENTERPRISE APPLICATIONS WITH JAVA	MCA160T	<ul style="list-style-type: none"> <li>To understand methods of the Applet and UI Component classes of the AWT.</li> <li>To create a well-structured MVC web application using Servlet, JSP and Struts Framework.</li> </ul>	<ul style="list-style-type: none"> <li>Discover and Apply various components and technologies used in Java platform</li> <li>Describe, Understand and adapt the basics of JSTL tags and EJB.</li> <li>Apply AWT and Swing components to design GUI</li> <li>Examine and develop Client-Server programs using Socket, RMI and Servlet.</li> <li>Distinguish and Choose the Struts 2 framework for building Java EE applications.</li> <li>Device and Construct a well-structured MVC web application using Servlet and JSP.</li> </ul>	<b>global development al needs</b>
2	OPEN SOURCE DATABASE MANAGEMENT SYSTEM	MCA164I	<ul style="list-style-type: none"> <li>To construct simple and moderately advanced database queries using Structured Query Language (SQL).</li> <li>To understand the role of the database administrator.</li> </ul>	<ul style="list-style-type: none"> <li>Discover the various SQL, PL/SQL and DBA statements.</li> <li>Understand the basic concepts of relational database management system and design structure models.</li> <li>Apply the normalization procedure to design a suitable structure for a given problem situation.</li> </ul>	<b>global development al needs</b>

				<ul style="list-style-type: none"> <li>• Extract, formulate and execute different SQL queries to interact with the database.</li> <li>• Implement processing logic in the form of PL/SQL blocks routines like functions, procedures, cursors and triggers.</li> <li>• Understand the role play of the database administrator and</li> </ul>	
3	<b>COMPUTER GRAPHICS</b>	MCA261T	<ul style="list-style-type: none"> <li>• To provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.</li> <li>• To learn the principles and commonly used paradigms and techniques of computer graphics.</li> <li>• To impart a thorough knowledge on 2D and 3D transformations, modeling, image synthesis, and rendering.</li> <li>• To gain a proficiency with OpenGL for writing applications that produce 2D and 3D computer graphics.</li> <li>• To gain a proficiency in DIRECTX for writing applications that produce 2D and 3D computer graphics.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand and apply the core concepts and mathematical foundations of computer graphics.</li> <li>• Analyze and apply 2D and 3D transformations on graphics objects and their applications in composite form.</li> <li>• Extract scene with different clipping methods and correlate the clipping methods.</li> <li>• Compare and correlate various projections and visible surface detection techniques for the display of 3D scene on 2D screen.</li> <li>• Device and Develop programs for the 3D transformation, projection and visible surface methods in OpenGL.</li> <li>• Model, Devise, Develop interactive 3D applications using DIRECTX software.</li> </ul>	<b>local, regional, national and global development al needs</b>

4	<b>DESIGN AND ANALYSIS OF ALGORITHMS</b>	MCA262T	<ul style="list-style-type: none"> <li>• To learn the basics of Algorithms design and analysis.</li> <li>• To understand the divide &amp; conquer and greedy methods with applications.</li> <li>• To understand the dynamic programming and backtracking methods with applications.</li> <li>• To learn the mode of randomized and approximation algorithms with applications.</li> <li>• To learn about reduction, non-deterministic and parallel algorithm with applications.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe and elicit the relevance of algorithms for computational problems solving and software engineering.</li> <li>• Observe and Apply various algorithmic approaches, techniques and methods.</li> <li>• List, Elicit and Apply design and analysis techniques to model and solve a problem.</li> <li>• Correlate and Evaluate the efficiency of an algorithm</li> <li>• Differentiate and Compute the time and space complexities of an algorithm.</li> <li>• Design and Evaluate any given problem with mathematical rigor to provide a scientific solution.</li> </ul>	<b>global development al needs</b>
5	<b>ELECTIVE I: ARTIFICIAL INTELLIGENCE</b>	MCA263TA	<ul style="list-style-type: none"> <li>• Study the concepts of Artificial Intelligence.</li> <li>• Learn the methods of solving problems using Artificial Intelligence.</li> </ul>	<ul style="list-style-type: none"> <li>• Discover and Apply the various technologies used in Artificial Intelligence</li> <li>• Observe and Discover the history of artificial intelligence (AI) and its foundations</li> <li>• Observe and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.</li> </ul>	<b>global development al needs</b>

				<ul style="list-style-type: none"> <li>Analyse and Evaluate various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.</li> <li>Ability to choose appropriate Knowledge based approach for problem solving.</li> <li>Draft, Design and create their own artificial intelligence applications for solving a real life problem</li> </ul>	
6	<b>BLOCK CHAIN TECHNOLOGY</b>	MCA361T	<ul style="list-style-type: none"> <li>To understand the concepts of a public digital ledger to share information in a trustworthy and secure way.</li> <li>To discuss and cover both the conceptual as well as application aspects of Block chain.</li> </ul>	<ul style="list-style-type: none"> <li>Observe and Explain the architecture of a blockchain network.</li> <li>Observe and Apply the basics of decentralization.</li> <li>Discuss and Practice the basics of security.</li> <li>Differentiate and Use DES and AES algorithms in blockchain.</li> <li>Correlate and Apply the bitcoin infrastructure with blockchain.</li> <li>Demonstrate and Use the bitcoin transaction life cycle.</li> <li>Observe, Elicit and Classify the bitcoin payment infrastructure.</li> <li>Correlate and Utilize the types of digital wallets.</li> </ul>	<b>global development al needs</b>

				<ul style="list-style-type: none"> <li>Observe and Classify the application of blockchain in Internet of Things.</li> <li>Discuss and Justify the application of blockchain in Government sector.</li> </ul>	
7	<b>OPEN SOURCE FRAMEWORKS</b>	MCA362T	<ul style="list-style-type: none"> <li>To understand the web technology and be able to architect, write, debug, and run complete web applications using PHP, MySQL and Angular JS.</li> <li>To create and develop the web applications with Laravel Framework.</li> <li>To use the Spring framework container to develop in any Java environments.</li> </ul>	<ul style="list-style-type: none"> <li>Describe and Discuss the necessity of open source framework in PHP and Java.</li> <li>Observe and Elicit the basics of MVC concepts in AngularJS, Laravel and Spring Web.</li> <li>Observe and practice the knowledge of frameworks in the development of web applications</li> <li>Analyse and Evaluate the performance of web frameworks.</li> <li>Ability to choose appropriate framework and practice them in real time problem applications.</li> <li>Draft and develop web application using open source framework.</li> </ul>	<b>global development al needs</b>
8	<b>ELECTIVE III: BIG DATA</b>	MCA364B	<ul style="list-style-type: none"> <li>To understand the basics and challenges of Big Data.</li> <li>To learn and practice NoSQL database MongoDB.</li> <li>To develop MapReduce jobs using Hadoop Frameworks and HDFS.</li> </ul>	<ul style="list-style-type: none"> <li>Bring out and Classify the data grouping mechanism in structured, semi-structured, and unstructured form.</li> </ul>	<b>global development al needs</b>

				<ul style="list-style-type: none"> <li>• Observe and Give examples for how big data are organized (framework/architecture) and made used by the enterprise's (domain specific).</li> <li>• Observe and Practice the un-structural data representation using the NoSQL database MongoDB (domain specific).</li> <li>• Infer and Device the big data file structure format using the Map-Reducer architecture style.</li> <li>• Generalize and Practice the Map-Reducer procedure on the specified problem.</li> <li>• Analyze and Evaluate the real data samples using Map Reducer procedure</li> </ul>	
9	<b>ELECTIVE IV: DATA ANALYTICS WITH R PROGRAMMING</b>	MCA466A	<ul style="list-style-type: none"> <li>• In this course students will learn R. Programming language, data analytics, data visualisation and statistical model for data analytics.</li> <li>• By completion of this course, students will be able to know about data analytics</li> </ul>	<ul style="list-style-type: none"> <li>• Recognize and Explain the nature, source and the applications of data analytics</li> <li>• Observe and Understand the basics on R programming language and apply suitable techniques for data analytics.</li> <li>• Visualize and Report the data from different sources</li> </ul>	<b>global development al needs</b>

				<ul style="list-style-type: none"> <li>• Draft and Develop proficiency with statistical analysis of data</li> <li>• Demonstrate skill in data management and conclude with the result</li> <li>• Create and Classify the data for analytics through active and reinforcement learning</li> </ul>	
10	<b>ELECTIVE IV: DATA AND INFORMATION SECURITY</b>	MCA466B	<ul style="list-style-type: none"> <li>• To explain the key concepts in cryptography.</li> <li>• To learn the concepts of security.</li> <li>• To learn symmetric key cryptography.</li> <li>• To understand asymmetric key cryptography.</li> <li>• To understand internet security protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe and Discuss the basic principles of security.</li> <li>• Observe and Apply the substitution and transposition methods.</li> <li>• Recognize and Compute symmetric ciphers</li> <li>• Tabulate and Compute Asymmetric ciphers</li> <li>• Observe , Discuss and Correlate the concept of digital signatures with security</li> <li>• Recognize and Express the structure of Public Key Interfaces.</li> <li>• Observe and Explain the basic concepts in Internet Security.</li> <li>• Observe and Use the Internet Security Protocols.</li> <li>• Recognize and Operate the User Authentication Methods.</li> <li>• Recognize and Assess the architecture of kerberos.</li> </ul>	<b>global development al needs</b>



11	<b>ELECTIVE V: GAME PROGRAMMING</b>	MCA467B	<ul style="list-style-type: none"> <li>• To learn about the gaming environment.</li> <li>• To learn about the 3D programming concepts.</li> <li>• To know about the client and server module in game programming.</li> <li>• To create a model game</li> </ul>	<ul style="list-style-type: none"> <li>• Describe and Discuss the principles of 2D and 3D graph images and handling of shapes.</li> <li>• Observe and Demonstrate the basics of game design and development.</li> <li>• Analyze and Evaluate the simple games in internet and customized the same and get executed.</li> <li>• Apply and develop simple game using C, C++, languages.</li> <li>• Draft and Design a new game</li> <li>• Observe, Recognise and Perceive to deploy the game in internet of as desktop publisher</li> </ul>	<b>global development al needs</b>
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