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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 Programme: B. Sc. Computer Science

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PROBLEM SOLVING TECHNIQUES	CS120	<ul style="list-style-type: none"> <li>To develop problem solving skills with top down design principles.</li> <li>To become competent in algorithm design and program implementation.</li> <li>To develop skills to apply appropriate standard methods in problem solving</li> </ul>	<ul style="list-style-type: none"> <li>Upon Completing the Course, Students will be able to:</li> <li>Develop programming techniques required to solve a given problem.</li> <li>Develop problem solving skill using top – down design principles.</li> <li>Design an algorithm for a problem.</li> <li>Develop techniques to handle array structure</li> <li>Develop techniques such as searching and sorting</li> </ul>	<b>Global developmental needs</b>
2	WEB DEVELOPMENT USING HTML	CS121	<ul style="list-style-type: none"> <li>To provide a comprehensive overview of the two largest Web technologies, Hyper Text Markup Language (HTML), and Cascading Style.</li> <li>To learn through hands-on,</li> </ul>	<ul style="list-style-type: none"> <li>Upon Completing the Course, Students will able to:</li> <li>Use knowledge of HTML and CSS code and an HTML editor to create personal and/or business websites</li> </ul>	<b>Global developmental needs</b>

			<p>practical instruction that will assist the students to tackle the real-world problems they face in building websites today— with a specific focus on HTML and CSS</p> <ul style="list-style-type: none"> <li>To develop an ability to design and implement a web site</li> </ul>	<p>following current professional and/or industry standards.</p> <ul style="list-style-type: none"> <li>Use critical thinking skills to design and create websites</li> </ul>	
3	DIGITAL COMPUTER FUNDAMENTALS	CS221	<ul style="list-style-type: none"> <li>To explore the Number System, Number Conversion from one Base to another Base and Complements.</li> <li>To understand the Logic Gates, Boolean Algebra and to design the Logical Circuits.</li> <li>To simplify the Boolean Functions using K-Map Method</li> <li>To Learn Combinational circuits as Adders and Subtractors, Encoders and Decoders.</li> <li>To Learn the different types of Flip-Flops such as SR Flip flop, JK Flip flop, T Flip flop and D Flip flop .</li> </ul>	<ul style="list-style-type: none"> <li>Perform conversions among different number systems, to be familiar with basic logic gates,</li> <li>Draw the Logic circuits and truth table for Boolean functions</li> <li>Simplify Boolean functions by using k-map method and Boolean Laws and Theorems.</li> <li>Design of combinational circuits such as Adder, Subtractor, Multiplexer, Encoder and Decoder etc.</li> <li>Understand the design of sequential Circuits such as Flip-Flops, Edge-trigger and master slave flip flops.</li> </ul>	<b>Global developmental needs</b>
4	PROGRAMMING USING C	CS222	<ul style="list-style-type: none"> <li>To enhance analyzing and problem-solving skills and use the same for writing programs in C.</li> <li>To develop logics which will help them to create programs, applications in C.</li> <li>To use the comparisons and limitations of the various programming constructs and</li> </ul>	<ul style="list-style-type: none"> <li>After course completion the students will have the following Course Outcomes:</li> <li>Understanding a functional hierarchical code organization.</li> <li>Ability to define and manage data structures based on problem subject domain.</li> <li>Ability to work with textual information, characters and</li> </ul>	<b>Global developmental needs</b>

			<p>choose the right one for the task in hand.</p> <ul style="list-style-type: none"> <li>To enter the program on a computer, edit, compile, debug, correct, recompile and run it.</li> </ul>	<p>strings.</p> <ul style="list-style-type: none"> <li>Ability to work with arrays, structures, pointers and files.</li> </ul>	
5	COMPUTER ORGANIZATION AND ARCHITECTURE	CS322	<ul style="list-style-type: none"> <li>To understand the basics of Computer Organization.</li> <li>To know the relationship between computer instruction and the Machine code execution.</li> <li>To know about the various types of CPU Organization and Addressing Modes.</li> <li>To recognize the need of interface between CPU and Input / Output devices.</li> <li>To think critically, independently, and quantitatively about Computer Memory.</li> </ul>	<ul style="list-style-type: none"> <li>Study basic computer organization, design and micro-operations.</li> <li>Prepare machine code from the instructions</li> <li>Understand CPU organization and different types of addressing modes.</li> <li>Understand how the Input/ Output devices communicate with the computer</li> <li>Learn various methods and techniques of memory organization.</li> </ul>	<b>Global developmental needs</b>
6	DATA STRUCTURES AND ALGORITHMS USING C	CS323	<ul style="list-style-type: none"> <li>To provide the knowledge of basic data structures and their implementations.</li> <li>To understand importance of data structures in context of writing efficient programs.</li> <li>To develop skills to apply appropriate data structures in problem solving</li> </ul>	<ul style="list-style-type: none"> <li>Upon Completing the Course, Students will able to:</li> <li>Learn the basic types for data structure, implementation and application.</li> <li>Know the strength and weakness of different data structures.</li> <li>Use the appropriate data structure for a given problem.</li> <li>Develop programming skills required to solve a given problem.</li> </ul>	<b>Global developmental needs</b>

7	SOFTWARE ENGINEERING	CS422	<ul style="list-style-type: none"> <li>• Understand the principles of large scale software systems, and the processes that are used to build them.</li> <li>• Acquire ability to the software-development process, including requirements analysis, design, programming, testing and maintenance.</li> <li>• Understand the Communication issues in large, complex software projects.</li> <li>• Understand purpose and importance of the project management from the perspective of planning, tracking and completion of project.</li> </ul>	<ul style="list-style-type: none"> <li>• Upon completion of this course, students should be able to:</li> <li>• Plan and deliver an effective software engineering process, based on knowledge of widely used development lifecycle models.</li> <li>• Employ group working skills including general organization, planning and time management and inter-group negotiation.</li> <li>• Capture, document and analyze requirements.</li> <li>• Translate a requirements specification into an implementable design, following a structured and organized process.</li> <li>• Make effective use of UML, along with design strategies such as defining a software architecture, separation of concerns and design patterns.</li> <li>• Formulate a testing strategy for a software system, employing techniques such as unit testing, test driven development and functional testing.</li> <li>• Evaluate the quality of the requirements, analysis and design work done during the module.</li> </ul>	<p style="text-align: center;"><b>Global developmental needs</b></p>
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8	RELATIONAL DATABASE MANAGEMENT SYSTEMS	CS423	<ul style="list-style-type: none"> <li>• To understand the basic principles of Databases and DataModels.</li> <li>• To know about the Relational Data Structures and Relational Algebra.</li> <li>• To understands the concepts of Functional Dependency and Normalization.</li> <li>• To learn the features and to write Queries usingSQL.</li> <li>• To explore the organization and to acquire skills in developing programs usingPL/SQL.</li> </ul>	<ul style="list-style-type: none"> <li>• Gain a good understanding of the architecture functioning of database management systems as well as associated tools and techniques.</li> <li>• Implement the Entity Relationship Diagram using various E-R Diagram Symbol.</li> <li>• Develop a good database design using normalization techniques.</li> <li>• Understand the use of structured query language &amp; PL/SQL, its syntax, its working and its scope.</li> <li>• Acquire a good understanding of database systems concepts and to be in a position to use and design databases for differentapplications</li> </ul>	<p style="text-align: center;"><b>Global developmental needs</b></p>
9	PROGRAMMING USING JAVA	CS540	<ul style="list-style-type: none"> <li>• To acquire the programming skills in core java applications.</li> <li>• To learn the art of GUI programming with Applet.</li> <li>• To write interface with Applet Controls.</li> <li>• To understand the Layouts of Applets.</li> <li>• To establish database connectivity.</li> <li>• To learn the Interaction between AWT control and Data Base.</li> </ul>	<ul style="list-style-type: none"> <li>• Upon completion of this course, students should be able to:</li> <li>• Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.</li> <li>• Identify classes, objects, members of a class and the relationships among them needed for a specific problem.</li> <li>• Create Java application programs using sound OOP practices (e.g., interfaces and</li> </ul>	<p style="text-align: center;"><b>Global developmental needs</b></p>

				<p>APIs) and proper program structuring (e.g., by using access control identifies, and create user define package for specific task,(reusability concepts) error exception handling)</p> <ul style="list-style-type: none"> <li>• Develop programs using the Java standard class library.</li> <li>• Develop software in the Java programming language, (using applet, AWT controls, and JDBC)</li> </ul>	
10	WEB DEVELOPMENT USING XML	CS541	<ul style="list-style-type: none"> <li>• To know how to represent data over the Web using XML.</li> <li>• Understanding of the XML Document Object Model.</li> <li>• Understanding xml DTD and its uses.</li> <li>• Understanding xml schema and its uses.</li> <li>• Understanding JSON and its uses</li> </ul>	<ul style="list-style-type: none"> <li>• Upon completion of this course, students should be able to:</li> <li>• Describe how namespaces are used in XML.</li> <li>• Follow XML syntax rules.</li> <li>• Validate XML using DTD.</li> <li>• Construct XSLT style sheets for transforming HTML.</li> <li>• Construct XPath expressions for use within XSLT style sheet templates.</li> <li>• Be able to write the schema for the given XML documents in both DTD and XML Schema languages.</li> <li>• Be able to parse XML documents by using DOM.</li> </ul>	<b>Global developmental needs</b>
11	PROGRAMMING USING PHP	CS542	<ul style="list-style-type: none"> <li>• To learn about PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages</li> </ul>	<ul style="list-style-type: none"> <li>• Upon completion of this course, students should be able to:</li> <li>• Understand process of</li> </ul>	<b>Global developmental needs</b>

			<ul style="list-style-type: none"> <li>• To Understand File handling concepts</li> <li>• Understanding PHP code to connect, access, and update a MySQL database</li> <li>• Understanding PHP using XML</li> </ul>	<p>executing a PHP-based Script on a webserver.</p> <ul style="list-style-type: none"> <li>• Understand basic PHP syntax for variables use and standard language constructs, such as conditional and loops.</li> <li>• Storing data in arrays.</li> <li>• Using PHP built-in functions and creating custom functions</li> <li>• Understanding POST and GET in form submission.</li> <li>• How to receive and process form submission data.</li> <li>• Reading and writing cookies.</li> <li>• Create a database in phpMyAdmin Read and process data in a MySQL database.</li> </ul>	
12	OPERATING SYSTEMS	CS543	<ul style="list-style-type: none"> <li>• To acquire the principles of Operating System, Process, its Description, Uniprocessor and Multiprocessor and its Scheduling Techniques.</li> <li>• To understand the concept of Mutual Exclusion, Deadlock and its detection, prevention &amp; avoidance.</li> <li>• To learn the various Main Memory and Virtual Memory Management techniques.</li> <li>• To explore the Organization and Management of I/O, Disk and File Managements.</li> </ul>	<ul style="list-style-type: none"> <li>• To make students able to learn different types of operating systems along with concept of file systems and CPU scheduling algorithms used in operating system.</li> <li>• To provide students knowledge of memory management schemes and I/O handling algorithms.</li> <li>• At the end of the course, students will be able to implement various algorithms required for management, scheduling, allocation and communication used in operating system.</li> </ul>	<b>Global developmental needs</b>

				<ul style="list-style-type: none"> <li>• Able to compare &amp; constant various scheduling algorithm</li> </ul>	
13	COMPUTER GRAPHICS	CS544 A	<ul style="list-style-type: none"> <li>• Understand the Role and importance of Algorithms like Line drawing Algorithm, Circle drawing Algorithm, Character generating Algorithm.</li> <li>• Understand 2D and 3D Transformations.</li> <li>• Understand various Clipping Algorithms like point clipping, line clipping and polygon clipping.</li> <li>• Understand the importance of the User Dialogue and various input functions.</li> <li>• Understand the Visible Surface Detection Methods.</li> </ul>	<ul style="list-style-type: none"> <li>• To provide comprehensive introduction about computer graphics system, design and two dimensional transformations.</li> <li>• To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations.</li> <li>• Prepares the students for activities involving in design, development and testing of modeling, rendering, shading and animation</li> </ul>	<b>Global developmental needs</b>
14	DATA MINING AND WAREHOUSING	CS544 B	<ul style="list-style-type: none"> <li>• To understand data mining principles and techniques and Introduce DM as a cutting edge business intelligence</li> <li>• To expose the students to the concepts of data warehousing architecture and implementation</li> <li>• To study the overview of developing areas – web mining, text mining and ethical aspects of data Mining</li> <li>• To identify business applications and trends of data mining</li> </ul>		<b>Global developmental needs</b>



15	DECISION SUPPORT SYSTEM	CS544 C	<ul style="list-style-type: none"> <li>To introduce the decision making system, models and support</li> <li>To appraise the general nature and range of decision support and group support systems</li> <li>To impart about knowledge based system and advanced intelligent systems</li> </ul>		<b>Global developmental needs</b>
16	SOFTWARE TESTING AND QUALITY ASSURANCE	CS544 D	<ul style="list-style-type: none"> <li>To introduce various approaches, techniques, technologies, and methodologies used in software testing and quality assurance.</li> <li>To understand the role of testing in applications</li> <li>To learn to design the test cases</li> <li>To know the different levels of testing</li> <li>To study the state-of-the-art of software testing and quality assurance</li> </ul>		<b>Global developmental needs</b>
17	MOBILE APPLICATIONS DEVELOPMENT	CS633	<ul style="list-style-type: none"> <li>To develop a mobile application.</li> <li>To understand the concept of SQLite</li> </ul>	<p>Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> <li>Describe the platforms upon which the Android operating System will run.</li> <li>Create a simple application that runs under the Android operating system.</li> <li>Access and work with the Android file system.</li> <li>Create an application that uses multimedia under the Android operating system.</li> <li>Access and work with</li> </ul>	<b>Global developmental needs</b>

				database under the Android operating system.	
18	PROGRAMMING USING PYTHON	CS634	<ul style="list-style-type: none"> <li>• Develop basic understanding of the basics of Python programming language.</li> <li>• Learn core Python scripting elements such as data types and flow control structures.</li> <li>• Design simple applications using Python.</li> </ul>	<p>After this course, the student will be able to</p> <ul style="list-style-type: none"> <li>• Understand and apply Python's core data types while writing new programs.</li> <li>• Express different decision making statements and functions</li> <li>• Understand and summarize the different file handling operations</li> </ul>	<b>Global developmental needs</b>
19	LINUX AND SHELL PROGRAMMING	CS635	<ul style="list-style-type: none"> <li>• State the major components and describe the architecture of the UNIX operating system.</li> <li>• To learn and understand UNIX commands.</li> <li>• State how the shell functions at the user interface and command line interpreter.</li> <li>• Create structured shell programming with flow control constructs.</li> </ul>	<p>Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> <li>• Understand the basic Unix command</li> <li>• Understand the concepts piping and redirections.</li> <li>• Create a shell script using VI editor.</li> <li>• Able to develop using shell script to solve simple application problem.</li> </ul>	<b>Global developmental needs</b>
20	MICROPROCESSOR USING 8086/88	CS636	<ul style="list-style-type: none"> <li>• To Understand the basic architecture of the Microprocessor</li> <li>• To learn the instruction sets of the processor</li> <li>• To write applications using assembly level language program</li> <li>• To study the input/output interfaces of the processor</li> <li>• To understand the importance</li> </ul>	<p>At the end of the course, students should be able to:</p> <ul style="list-style-type: none"> <li>• Identify the types of instructions and the organization of registers and memory</li> <li>• Describe the translation model of assembly language to machine language.</li> <li>• Understand the micro-program by mapping the instructions.</li> </ul>	<b>Global developmental needs</b>

			of interrupts in programming	<ul style="list-style-type: none"> <li>Recognize the types of computer organizations.</li> <li>Accept the better ways of Parallel and Vector processing.</li> </ul>	
21	COMPUTER NETWORKS	CS637 A	<ul style="list-style-type: none"> <li>To learn the basic concepts of Computer Networks</li> </ul>	<ul style="list-style-type: none"> <li>To explain how communication works in computer networks and to understand the basic terminology of computer networks</li> <li>To explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack.</li> <li>To understand design issues in Network Security and to understand security threats, security services and mechanisms to counter it.</li> </ul>	<b>Global developmental needs</b>