

**Name of the Department :Computer Science**  
**Programme : PG**

<b>SEMESTER I</b>			
<b>S No</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Course outcome</b>
1.	16PCSC11	Discrete Mathematics	<ul style="list-style-type: none"> <li>• Familiarity with construction proofs</li> <li>• Learn the strategies for comparing graphs and trees</li> <li>• Solve problems in Computer Science using logical notations</li> <li>• Understand Boolean Algebra and Truth tables</li> <li>• Apply the rules of inference, predicate calculus &amp; mathematical induction</li> <li>• Learn to express logical sentences in terms of connectives</li> </ul>
2.	16PCSC12	Data Structures and Algorithms	<ul style="list-style-type: none"> <li>• Learn to choose appropriate data structure as applied to specified problem definition.</li> <li>• Acquire skills to use operations like searching, insertion, deletion,</li> <li>• Traversing mechanism etc. on various data structures.</li> <li>• Students will be able to apply concepts learned in various do mains like DBMS, compiler construction etc.</li> <li>• Use linear and non -linear data structures like stacks, queues , linked list etc</li> <li>• Describe stack, Queue and linked list operations.</li> </ul>
3.	16PCSC13	Advanced C and C++	<ul style="list-style-type: none"> <li>• Gain knowledge to use pointers and reference parameter</li> <li>• Implement features of OOP's to solve real world problems</li> <li>• Solve the given problems using Arrays</li> <li>• Implement file operations for given applications</li> <li>• Design algorithmic solution for given problem</li> <li>• Acquire master in handling TSR Routine</li> </ul>
4.	16PCSC14	Operating System	<ul style="list-style-type: none"> <li>• Gain mastery functions, structures and history of operating systems</li> <li>• Understand design issues associated with operating systems</li> <li>• Identify various process management concepts including scheduling, synchronization, deadlocks</li> </ul>

			<ul style="list-style-type: none"> <li>• Learn multithreading</li> <li>• Gain knowledge in memory management including virtual memory</li> <li>• Master issues related to file system interface and implementation, disk management</li> </ul>
5.	16PCSC1Q	Advanced C & C++ Lab	<ul style="list-style-type: none"> <li>• Familiarization of language environment</li> <li>• Apply C features including arrays, structures and pointers</li> <li>• Understand Object oriented features in real world problems</li> <li>• Utilize the concept of polymorphism and inheritance</li> <li>• Develop applications using Console I/O and File I/O.</li> <li>• Employ good software engineering practices such as incremental development</li> </ul>
6.	16PCSC1P	Data Structures & Algorithms Lab	<ul style="list-style-type: none"> <li>• Analyze the time and space efficiency of the data structure</li> <li>• Identity the appropriate data structure for given problem</li> <li>• Acquire practical knowledge on the application of data structures</li> <li>• Develop skills to design and analyze simple and non linear data structures.</li> <li>• Identify the appropriate data structures for given problem.</li> <li>• Design &amp; implement graph data structure</li> </ul>
<b>SEMESTER II</b>			
1.	16PCSC21	Advanced Java Programming	<ul style="list-style-type: none"> <li>• Acquire Basic Knowledge in Advanced Java</li> <li>• Gain knowledge in Swing and Networking, and JSF</li> <li>• Handle all classes, inheritance and polymorphism</li> <li>• Acquire Knowledge in handling swing components and containers</li> <li>• Apply handle network sockets.</li> <li>• Work with database connection and JSF framework</li> </ul>
2.	16PCSC22	Data Communication and Networks	<ul style="list-style-type: none"> <li>• Learn the fundamentals of computer science.</li> <li>• Gain knowledge in the functionalities of each and every layer in network.</li> <li>• Ability to realize and compare different LAN topologies.</li> <li>• Implement and Compare the performance of Data</li> </ul>

			<p>Link Layer protocols.</p> <ul style="list-style-type: none"> <li>• Analyze the services and features of the various layers in the protocol stack.</li> <li>• Differentiate different routing algorithms and their usage.</li> </ul>
3.	16PCSC23	Relational Database Management System	<ul style="list-style-type: none"> <li>• Understand the basic concepts &amp; constructing queries using SQL</li> <li>• Familiar with basic database storage structures &amp; access techniques</li> <li>• Analyse an information and express it in the form of E-R Diagrams</li> <li>• Recognise the usage of relational algebra and schemas</li> <li>• Handle recovery techniques, used to recover from crashes</li> <li>• Develop sophisticated queries to extract information from large datasets</li> </ul>
4.	16PCSO21	Mobile Application	<ul style="list-style-type: none"> <li>• Apply general programming knowledge in the field of developing mobile applications</li> <li>• Understand specific requirements, possibilities and challenges in developing for a mobile context</li> <li>• Acquire skills to work on Android Development Environment</li> <li>• Develop effective .apk files</li> <li>• Understand interaction between user interface and underlying application infrastructure</li> <li>• Plan and carry out a design work including developing prototype that can be evaluated with specified user group</li> <li>• Acquire practical skills and knowledge to construct software for a mobile application</li> </ul>
5.	16PCSO22	Compiler Design	<ul style="list-style-type: none"> <li>• Gain knowledge of lex tool &amp; yacc tool to develop a scanner &amp; parser</li> <li>• Understand building symbol tables and generating intermediate code.</li> <li>• Identify the code optimization techniques to improve the performance of a program in terms of speed &amp; space</li> <li>• Acquire knowledge in modern compiler &amp; its features</li> </ul>

			<ul style="list-style-type: none"> <li>• Understand the new tools and technologies used for designing a compiler</li> <li>• Understand the patterns, tokens &amp; regular expressions.</li> </ul>
6.	16PCSO23	Data Mining	<ul style="list-style-type: none"> <li>• Gain knowledge in data mart designing and implementation.</li> <li>• Understand principles and applications of warehouse.</li> <li>• Design physical, logical and conceptual model.</li> <li>• Understand various classification algorithms.</li> <li>• Acquire skills measure the classified data.</li> <li>• Apply mining concepts in real world issues.</li> </ul>
7.	16PCSC2P	Advanced Java Programming Lab	<ul style="list-style-type: none"> <li>• Develop basic programs using control statements, Arrays, Inherited classes and Exception</li> <li>• Gain knowledge in handling Net Beans Environment</li> <li>• Acquire knowledge in developing basic swing programs</li> <li>• Utilize Object Serialization</li> <li>• Possess knowledge in handling Synchronization</li> <li>• Perform Network and Database programs</li> </ul>
8.	16PCSC2Q	RDBMS Lab	<ul style="list-style-type: none"> <li>• Populate and query a database using SQL DML/DDDL commands.</li> <li>• Apply PL/SQL including stored procedures, stored functions, cursors, packages in application development</li> <li>• Design different views of tables for different users</li> <li>• Design and build a GUI application using database</li> <li>• Design and implement a database with data consistency</li> <li>• Apply current technical concepts and practices in the core information technologies</li> </ul>
<b>SEMESTER III</b>			
1.	16PCSC31	Web Technology	<ul style="list-style-type: none"> <li>• Gain knowledge about Internet and World Wide Web</li> <li>• Design webpages using XHTML tags and attributes</li> <li>• Acquire knowledge about server side and client side program.</li> <li>• Write Javascript programs with arrays, cookies and objects</li> <li>• Gain knowledge about Creating and Validating Forms using PHP</li> </ul>

			<ul style="list-style-type: none"> <li>• Connect PHP with MySQL.</li> <li>• Ability to handle JQuery.</li> </ul>
2.	16PCSC32	Software Project Management	<ul style="list-style-type: none"> <li>• Ability to manage the selection and initiation of individual projects and of portfolios of projects in the enterprise.</li> <li>• Conduct project planning activities that accurately forecast project costs, timelines, and quality. Implement processes for successful resource, communication, and risk and change management</li> <li>• Learn practical application of project management to formulate strategies allowing organizations to achieve strategic goals</li> <li>• Develop critical-thinking and analytical decision-making capabilities to investigate complex business problems to propose project-based solutions</li> <li>• Acquire skills to manage creative teams and project processes effectively and efficiently</li> <li>• Develop team-building skills to managing projects, project teams, and stakeholders.</li> </ul>
3.	16PCSO31	Network Security and Cryptography	<ul style="list-style-type: none"> <li>• Understand how the communication works in computer networks and the basic terminology of computer networks.</li> <li>• Understand the use of client/server architecture, inter process communication and to explain the basic communication protocols.</li> <li>• Understand the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack.</li> <li>• Explore the design issues in network security and to understand security threads, security services and mechanisms to counter them.</li> <li>• Apply the network authentication services and mechanisms and skills obtained to study further concepts in network</li> </ul>
4.	16PCSO32	Neural Networks	<ul style="list-style-type: none"> <li>• Gain knowledge about information security, public and secret key cryptosystems.</li> <li>• Understand the approaches to syntax and semantics machine learning the various types of network models.</li> </ul>

			<ul style="list-style-type: none"> <li>• Analyse the elements of formal learning law theorem, and types of learning process and computational process.</li> <li>• Identify the basic pattern strategies for neurons structure the pattern structure and algorithms for pattern approaches and mapping, clustering a pattern.</li> <li>• Apply the fundamental algorithms and techniques in the area of neural network.</li> <li>• Learn the neural network direct applications in Natural Language Processing and speech recognition techniques the various types of language processors, and the vowels and verbal communications.</li> <li>• Acquire knowledge to solve problems in areas ranging from optimization problems to text analytics in neural networks.</li> </ul>
5.	16PCSO33	Object Oriented Analysis and Design	<ul style="list-style-type: none"> <li>• Understand the concept of object oriented development, and create a static object model and a dynamic behavioural model and a functional model of the system.</li> <li>• Understand the approaches to system design and object design and the techniques of translating design to implementation.</li> <li>• Understand the object oriented modelling and design patterns to provide solutions to the real world software design problems.</li> <li>• Understand the implementation of various designs patterns in UML, Data flow, use case and class design techniques.</li> <li>• Understand the development stages of object oriented analysis and design and estimating system performance.</li> <li>• Gain knowledge to perform object oriented analysis and design for different projects.</li> </ul>
6.	16PCSN31	Internet Technologies	<ul style="list-style-type: none"> <li>• Acquire knowledge in the concepts of HTML and JavaScript</li> <li>• Gain knowledge in data transferring via internet</li> <li>• Acquire knowledge in Basic HTML tags</li> <li>• Design a HTML page using tables, links, frames and list</li> </ul>

			<ul style="list-style-type: none"> <li>• Understand fundamentals of JavaScript</li> <li>• Create forms using JavaScript</li> </ul>
7.	16PCSC3P	Open Source Tools Lab	<ul style="list-style-type: none"> <li>• Gain knowledge about Necessity of using Open Source Tools</li> <li>• Acquire knowledge in Open Source Operating System – Linux</li> <li>• Handle Linux Basic and advanced commands</li> <li>• Gain knowledge about the Design Technique UML</li> <li>• Design UML diagrams using an open source tool.</li> <li>• Acquire knowledge in constructing SQL queries.</li> <li>• Handle MySQL Environment</li> <li>• Develop server side programs using PHP.</li> <li>• Ability to connect PHP with MySQL</li> </ul>
8.	16PCSC3Q	Dot Net Programming Lab	<ul style="list-style-type: none"> <li>• Gain an understanding of the Microsoft .NET architecture</li> <li>• Learn how to build object-oriented applications using VB and C-sharp</li> <li>• Acquire a working knowledge of creating rich internet Web application using the .NET Framework including ASP.NET,ADO.NET ,C# and Web Services</li> <li>• Real Time Configure and deploy a Microsoft DOT NET application.</li> <li>• Acquire Professional ethics in design and deploying an application</li> <li>• Procure employability in IT sector IT industry</li> </ul>
<b>SEMESTER IV</b>			
1.	16PCSC41	Advanced Computing	<ul style="list-style-type: none"> <li>• Describe the operation of modern and high performance computers.</li> <li>• Undertake performance comparisons of modern and high performance computers.</li> <li>• Improve the performance of applications on modern and high performance computers.</li> <li>• Understand the application areas of IOT</li> <li>• Realize the revolution of Internet of mobile devices, cloud &amp; server networks</li> <li>• Understand building blocks of IOT and characteristics</li> </ul>
2.	16PCSC42	Employability	<ul style="list-style-type: none"> <li>• Understand the significance of soft skills in working</li> </ul>

		Skills	environment <ul style="list-style-type: none"><li>• Learn to connect and work with others to achieve a set of task</li><li>• Handle emotions and respect for the opinions, personal space</li><li>• Develop self-motivation, raised aspirations and beliefs in one's own abilities</li><li>• Excel with focused approach in working environment</li><li>• Communicate effectively with creativity</li></ul>
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