BON SECOURS COLLEGE FOR WOMEN

Nationally Accredited with 'A' Grade by NAAC

UGC Recognized 2(f) and 12(B) Institution

VILAR BYPASS, THANJAVUR – 613 006

DEPARTMENT OF COMPUTER SCIENCE

PROGRAM OUTCOMES (PO)

PO1.Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2.Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3. Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them. Manual for Affiliated/Constituent UG & PG Colleges NAAC for Quality and Excellence in Higher Education 175

PO6. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

PROGRAMME SPECIFIC OUTCOMES (PSo) FOR POST GRADUATE

A graduate with a M.Sc. in Computer Science will have the ability to

PSO1. Communicate computer science concepts, designs, and solutions effectively and professionally

PSO2. Apply knowledge of computing to produce effective designs and solutions for specific problems

PSO3. Use software development tools, software systems, and modern computing platforms

PSO4. Design and develop computer programs/computer -based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics.

PSO5. Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems

PSO6. The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.

PSO7. The ability to work independently on a substantial software project and as an effective team member.

LEARNING OUTCOMES FOR POST GRADUATES

COURSE CODE	COURSE NAME	LEARNING OUTCOME
P16CS11	**Mathematical Foundation for Computer Science**	After completing this course, students will be able to: CO1. Comprehend and evaluate mathematical arguments revolving around computation.(L5) CO2. Understand the basics of Combinations and Permutations. (L2) CO3. Recall relations matrices and digraphs.(L1) CO4. Apply the knowledge on Graphs and Trees to real world applications. (L3) CO5. Demonstrate the working of Grammars and Languages.(L2) Co6.Apply knowledge of Mathematics and Computer Science(L3)
P16CS12	**Web Technology**	CO1. Students can analyze a web page and develop web application using HTML(L4) CO2.Students will be able to create a Javascript program (L6) CO3. Recall the Basic Concepts – Internet Domains – IP Address (L1) CO4. Students can develop web based application using suitable client side and server side web technologies.(L3) Co5.Create and manage the web databases using XML.(L6) Co6. Classify ASP – Objects – Components(L2)
P16CS15P	**Web Technology Lab**	CO1. Students can create web pages using HTML, Cascading Style Sheet (L6)

		CO2. Design a JSP Program for user authentication.(L6) CO3. Create a Javascript Program (L6) CO4.create a ASP Program for simple shopping cart. (L6) CO5. Generate a JSP Program to prepare a bio data and store it in database. (L6) CO6.Design and Developing professional software development skills. (L6 & L3)
P16CS13	**Design and analysis of Algorithms**	CO1. Students can explain different paradigms and explain the different algorithms and their uses.(L2) CO2.Demonstrate about Binary search. (L2) CO3. Explain the Maximum and Minimum merge sort.(L2) Co4.Explain about Greedy Method.(L2) Co5. Solve about The Travelling Salesperson Problem.(L3) Co6 Solve The 8-Queens Problem. (L3)
P16CS14	**Distributed Operating Systems**	Co1 Students can understand the different Distributed Systems and challenges in designing the Distributed Systems. (L6) Co2. Understand Synchronization (L6) Co3.Students able to understand Thrasing and Heterogeneous DSM (L6) Co4. Build Mobile Application development in ASP (L3) Co5.Develop to Accessing a Web Service through n ASP, NET application. (L3) Co6.Build SOAP concepts involved in Web Services (L3)
P16CS21	**OOAD and UML**	Co1.Recognize the concepts and principles of object-oriented programming concepts(L1) Co2. Understand the purposes, major components and key mechanisms of Class and Object Diagram. (L2) Co3. Discover the basic resource management responsibilities of Interaction Diagram. (L4) Co4. Build Knowledge on State-chart Diagram. (L3)

		Co5. Applying the techniques for Component and Deployment Diagrams.(L5) Co6.Analyze the subsystems, various components and collaborate them interchangeably.(L4)
P16CS22	**Distributed Technology**	Co1. Students will learn to design, implement, and debug large programming projects. (L6) Co2. Students will explain various distributed algorithms and design architecture of distributed system(L2) Co3. Students will apply practical experience in Uses of these controls and features in Website development. (L3) Co4.To Build Mobile Application development in ASP (L3) Co5. Develop to Accessing a Web Service through n ASP, NET application. (L3) Co6.Build SOAP concepts involved in Web Services (L3)
P16CS23P	**Distributed Technology lab**	Co1. Students can design Master Pages Views (L6) Co2. Students will explain various distributed algorithms and design architecture of distributed system(L2) Co3. Students will apply practical experience in Uses of these controls and features in Website development. (L3) Co4.To Build Mobile Application development in ASP (L3) Co5. Develop to Accessing a Web Service through n ASP, NET application. (L3) Co6.Build SOAP concepts involved in Web Services (L3)
P16CSE1A	**Mobile Communication**	Co1.An overview of Mobile applications and Wireless Devices.(L6) Co2.Learn about Medium Access Control and Comparisons. (L6) Co3. Outline about the difference between UMTS and IMT 2000 systems (L2) Co4.Students able to analyze the MAC Frame-MAC Management. (L3) Co5. Discover about Tunnelling and Reverse Tunnelling. (L4) Co6.They can develop their ability to solve the problems in mobile by their own. (L3)

P16CSE2B	**Artificial Intelligence**	Co1. List AI problems and Al techniques. (L1) Co2. Demonstrate various Production Systems. (L2) Co3.Examine about Heuristic Search techniques. (L4) Co4.Able to Identify Frame Problem. (L1) Co5. Students able to understand Instance and Its relationship. (L1) Co6.Distinguish between Forward and Backward reasoning (L6)
P16CS31	**Data Mining &Ware Housing**	Co1.Demonstrate advanced knowledge of data mining concepts and techniques. (L2) Co2. Apply the techniques of clustering, classification, association finding, feature selection and visualisation on real world data (L3) Co3. Classify whether a real world problem has a data mining solution (L4) Co4. Apply data mining software and toolkits in a range of applications (L Co5. Set up a data mining process for an application, including data preparation, modelling and evaluation Co6. Demonstrate knowledge of the ethical considerations involved in data mining.
P16CS33P	**Data Mining Lab**	Co1. Outline practical experience using data mining techniques on real world data sets. (L2) Co2. Elaborate hands-on experience working with all real data sets.(L6) Co3.Design a data mart or data warehouse for any organization(L6) Co4.Build knowledge using data mining techniques(L6) Co5.Develop skills and apply data mining tools for solving practical problems (L3) Co6.Generate Advance relevant programming skills. (L6)
P16CSE3C	**Pervasive Computing**	Co1. Understand the fundamental concepts in pervasive computing (L1) Co2. Recall the applications (L1) Co3. Study the methods for efficient web application (L3) Co4. Learn and analyse the WAP components and services (L4)

		Co5. Classify the personal digital assistance (L2) Co6. Create and design the methods of pervasive applications (L6)
P16CS32	**Compiler Design**	Co1.Students can Respond various mobile applications (L3) Co2.Able to develop pervasive computing web applications. (L3) Co3. Students can solve the code with parsing techniques. (L3) Co4. Students can develop syntax tree for given grammar (L3) Co5. Students can understand how the storage allocations are maintained (L2) Co6. Students can understand about the code generation (L2)
P16CSE4A	**Network Security**	Co1. Students will be able to apply different encrypt and decrypt techniques (L3) Co2. Students will be able to create authorized and secured applications. (L6) Co3. Able to understand the -Symmetric Ciphers. (L2) Co4. Able to understand the Block ciphers and the Data Encryption Standards Public-key Encryption and Hash Functions (L2) Co5. Examine the knowledge about Authentication applications-Electronic Mail Security (L4)
P16CS41	**Cloud computing**	Co1. Identify the roots of cloud computing and their services(L1) Co2. Recall the challenges of Cloud (L2) Co3. Compare the VM services and scheduling techniques (L2) Co4. Analyse the issues and challenges of cloud (L4) Co6. Classify the dynamic ICT services and SLA(L4)
P16CS42	**Wireless Sensor Networks**	Co1.Students can explain the basic concept of wireless sensor networks. (L2) Co2. They can Respond layer-wise security measures.(L3) Co3. Organize about MAC Address. (L6) Co4. Learning about TCP/IP Protocols. (L6) Co5.Knowlege about Routing and Its Types.

		Co6.Students can explain the basic concept of Visualization and Various types of Visualization
P16CS43P	**Open-Source Lab**	CO1.Recognize the benefits and features of Open Source Technology.(L1) Co2. Develop and implement simple applications using PHP and Python (L3) Co3. Assemble the Network Interface(L6) Co4. Read, write and execute PHP programs CO5: Develop PHP programs using database(L3) CO6: Develop simple PHP applications (L3)
P16CSE5B	**Big Data Analytics**	CO1. Create algorithm to analyze the big data(L6) CO2. Identify the big data in the real world(L1) Co3. Develop the ability to use, store and retrieve the big data for analytics. (L3) Co4.Develop Big data technologies and Databases(L3) Co5. Build Mobile Application development in ASP(L6) Co6.Create a new Big data serialization format (L6)
P16CSPW	**Major Project**	CO1. Identify, define and justify scope of the proposed problem (L1) CO2. Create and analyze system requirements (L6) CO3. Choose an optimized solution among the existing solutions(L5) CO4. Justify software analysis and design techniques (L5) CO5. Develop a functional application based on the software design (L3) CO6. Apply coding, debugging and testing tools to enhance the quality of the (L3)

PROGRAMME SPECIFIC OUTCOMES (PSo) FOR UNDER GRADUATE

PSO1. Demonstrate the aptitude of Computer Programming and Computer based problem solving skills.

PSO2. Display the knowledge of appropriate theory, practices and tools for the specification, design, implementation.

PSO3. Learn and acquire knowledge through online courses available at different MOOC Providers.

PSO4. Link knowledge of Computer Science with other two chosen auxiliary disciplines of study.

PSO5. Display ethical code of conduct in usage of Internet and Cyber systems.

PSO6. Pursue higher studies of specialization and to take up technical employment.

PSO7. Formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate.

PSO8. Ability to operate, manages, deploy, configure computer network, hardware, software operation of an organization.

COURSE OUTCOMES					
Code and Title of the Course	**CO. 1**	**CO. 2**	**CO. 3**	**CO. 4**	**CO. 5 & CO. 6**
16SCCCS1-Programming in C	Understand the Constants, variables, Datatypes, operator & Expressions(L2)	Explain the Input and Output Operations, Decision Making and Looping (L2)	Build the function that can receive variables, arrays, pointers and structures(L3)	Compare the structures and Unions(L4)	Select open, read, manipulate, write and close files.(L3) Use appropriate data Linked List and Preprocessors. (L2)
16SCCCS1P-Programming in C Lab	Appraise the basic fundamentals of C programming language.(L5)	Assemble the different methods in Arrays.(L6)	Estimate the loops and decision making statements in C programming depending upon the required	Build the function that can receive variables, arrays, pointers and structures.(L6)	Choose the Single dimensional and multi-dimensional array using pointers. (L6) Elaborate various file modes in C programming.

			problem(L5)		(L6)
16SCCCS2 - Programming in C++	Tell about basic concepts of OOP in C++.(L1)	Use various theories that help to understand the Classes and objects.(L2)	Utilize the extending classes using funtions and polymorphism. (L3)	Distinguish I/O operations, Working with files. (L4) Distringuish with the template library and OOPs. (L4)	Contrast between the OOP with library and strings. (L4)
16SCCCS2P-Programming in C++ Lab	Create with own data using class (L5)	Plan a program using single digit to apply constructor, destructor and default constructor. (L6)	Formulate a program using function overloading for two matrics using different data types and find the sum of the array. (L6)	Generate a program using inheritence and operator overloading. (L6)	Modify the simple programm using pointers. (LL6) Compose Student mark sheet using file. (L6)
16CCCS3-Java Programming	Idenfiy the OOPs and Application language. (L1)	Illustrate the data types and variables. (L2)	Organize the OOP languages with classes, modifiers, packages and interfaces. (L3)	Categorize the exception Handling. (L4) Use different types of Multithreading. (L3)	Distinguish the Java I/O Stream and Applets. (L4)
16SCCCS3P-Java Programming Lab	Compose a program using arrays to implement FIND and REPLACE. (L6)	Improve a program to implement a calculator to perform arithmatic using constructor. (L6)	Defend students percentage and grade using command line arguments. (L5)	Combine Multiple inheritance using interfaces to solove the problems. (L6)	Create a program threads and assign priorities. (L6) Formulate the Java program using functions and applets to design webpage. (L6)

16SCCCS4-DBMS	Recall the database and mangament system using relational and query with data mining. (L1)	Classify the Relational Database. (L2)	Develop SQL query using operations. (L3)	Analyse the data base using E-R model. (L4)	Discover the Relational database using different Normal Form. (L4) Categorize the Database Design process. (L4)
16SCCCS4-DBMS Lab	Create a table and perform different keys. (L6)	Build mysql queries to implement different set operations. (L6)	Generate the Aggregate functions using sum, count, avarage, Maximum, Minimum. (L6)	Modify mysql queries using different join operations. (L6)	Rate the mysql queries to implement subqueries. (L5) Improve the mysql queries using different string operations. (L6)
PageMaker	Use a Business report, newsletter, advertisements by own using text. (L3)	Outline the modifying text, Working with multiple pages. (L2)	Apply the graphics, and designing the invitation. (L3)	Choose the Advanced graphics, adding color and using mail merge. (L3) Analyse Students can able to design real time applications such as Invitations,Broucher, etc,. (L4)	Organize the Pagemaker Tools and its functioning to create invitations, brouchers, and notices. (L3)
Digital Electronics and Microprocessor	List the number systems. Learning the number system including conversion. (L1)	Show the the use of Boolean algebra using different gates. (L2)	Apply the different adders using logic circuits. (L3)	Organize the Microprocessor ping the memory addressing capacity and CPU. (L3)	Classify the Microprocessor and assembler. (L4) Analyse the microprocessor and It produces the assembler instructions, data format (l4)
Dream Weaver	List out the website creation in dream weaver(L4)	Demonstrate the web pages, working with HTML tags. Enhancing the html tags.(L2)	Use Cascading style sheets. (L3)	Build the templates working the flash contents and HTML forms.(L3)	Analyse the Javascript to creating the web page. (L4) Utilize the tools and functions for creating the website. (L3)
Corel Draw	Identify the tools and functions of the coreldraw. (L1)	Apply the drawing and Learning the Selecting the tools. (L3)	Use the Text tools to devloping the text entries. (L3)	Develop the knowledge working with images. (L3)	Contrast the produces the layout design concept. (L4) Classify a designging for all types of media.(L4)

Data Structures and Algorithms	Identify the arrays and sequential representation. Understanding the concept of algorithms (L1)	Compare the different types of Tree representation. Students can Understand the basic concept of binary trees (L2)	Analyse the Algorithms using priority queues, heaps, heap sort, merge sort, quieck sort, finding maximum and minimum. Understand the concept of sorting. (L3)	Classify the different methods Like Greedy, Optimal, Knapsack, Job sequencing Optimal Merge patterns. (L4)	Inspect the back trasckingmthods.(L4) Summarize the Data structure and alsogrithms concept. (L2)
Computer Networks	Outline about the OSI models using the layers, Able to understand the different topology's in computer networks. (L2)	Build the concept about data link layer. (L3)	Build the packet switching using Network layers. (L3)	Carryout the Transport layer for the protocol. (L4)	Discover the application layer for the client serve based. (L4) Use the OSI layers and protocol for the network. (L3)
Software Engineering	Label the Software process models and importance of requirement. (L1)	Analysis the different modeling using OOPs with software design. Defining the various analysis modelling approach (L4)	Compare the OOPs fundamental parts of OOPs approach. (L2)	Distinguish the software coding and metrics and project management. (L4)	Discover the Web Engineering for web characterisitics using web applications. (L4) Analyse the various phases of software engineering process. (L4)
Operating Systems	Explain the operating systems software and history of Machine hardware. (L2)	Carryout the earlier systems for memory management. Understanding the concept of partitioning techniquee (L3)	Respond the multicore technologies over the processor management. (L3)	Use theh types of the Devices for the device management. Able to understand the storage devices (L3)	Inspect the file management for the file organization. (L4) Examine the file managment for the operating systems. (L4)
Programming in PHP	Identify the operators and flow control using PHP. (L1)	Use the functions reading data in the webpages using PHP. (L3)	List the OOPs programming functions applied for the PHP programmes. (L3)	Examine the File handing functions working with database using sessions, cookies. (L4)	Analyse the Ajax servers using PHP drawing and images. (L4) Classify the PHP programs with Ajax server. (L4)

Programming in PHP Lab	Compose the number to find scientific number. (L6)	Modify the program using condtionl statement. (L6)	Combine the functions to generate the table. (L6)	Comose the Webpage usingn database. (L6)	Design the webpage using text and graphics for the website. (L2) Build a database using MySql for the website. (L6)
Computer Graphics	List out the computer graphics devices. (L1)	Demonstrate the output primitive using graphic algorithms. (L2)	Utilize the different Geometric transormations for the computer graphics. (L3)	Apply the Graphics user interfaces for different dimensionsl techniques. (L3)	Summarize the Geometric and modeling transformation using applications of computer graphics. (L2) Distinguish on basic graphical techniques using dimenstional graphics. (L4)