

**JAGAT GURU NANAK DEV  
PUNJAB STATE OPEN UNIVERSITY PATIALA**  
(Established by Act No.19 of 2019 of Legislature of the State of Punjab)

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**Syllabus for the Post of Programmer**

**Programming Concepts Using PHP, ASP.NET and Java:-**

**PHP**

Introduction to PHP, Datatypes, Function, Array, Operators, File handling, working with forms, Session and Cookie, Database connectivity with MySQL, Exception Handling, Installing and configuring of XAMPP Server, Basic knowledge of frameworks (CodeIgniter, Laravel)

**ASP.NET**

ASP.NET Web Forms, ASP.NET Frameworks, ASP.NET Security, ASP.NET Core MVC, ADO.NET, .NET Framework Class Library, Common Language Runtime. An Introduction to C#, Classes and Objects, C# - Types, C# - Events, Properties, and Methods. Development Server - IIS.

**Java**

Java Program Development, Java Source File Structure, Java and Internet, Java Virtual Machine, Datatypes, Operators, Arrays, Control Statements and Looping Structures, Exception Handling, Multi - Threaded Programming. JDBC: Connectivity with MySQL, Stored procedures and functions. Basics of Servlet: Servlet API, Working with Apache Tomcat Server

**Other Web Technologies**

HTML5, CSS3, XML, Bootstrap, jQuery, JSON, AJAX, JavaScript, Static and Dynamic Web Development, Basics of Search Engine Optimization (SEO), Basics of server and client side scripting

**Database Management Systems (DBMS)**

Database- MySQL, SQL Server, PostgreSQL:

Keys, E-R Model, Normalization – 1NF to 5NF; Aggregate functions, Nested Sub queries, Views, Joined Relations, Transaction- ACID properties; Concurrency Control, triggers, stored procedures, Data Models, SQL Commands, Data Sorting, Database Design, SQL Function, Operators, Clauses, Relational Databases and Integrity Constraints.

**Computer Networks and System Administration**

LAN, MAN & WAN Architectures, Concept of WAN subnet, Overview of existing networks. OSI Reference Model Architecture, TCP/IP Model, IP Addressing, Internet Control Protocols. Basic Server Architectures. Network Security: Firewalls and their components; Encryption techniques and examples of encryption standards.

Client-Server Architecture, Server Implementation and Administration, Remote Network Management, System Administration (Windows and Linux Servers) with firewall administration as well as Router/Switches/Access Points

**Other**

Mobile Application Development: Basics of Android/iOS Programming, Software Development Methodologies, Design and Testing of Software Application