

SAVITRIBAI PHULE PUNE UNIVERSITY**Department of Electronic and Instrumentation Science****PGDAC COURSE STRUCTURE**

Module No.	Subject	Credits	No. of Lectures (hrs)
PGDAC-101	Hardware and Networking Fundamentals	2	45
PGDAC-102	Programming and Operating Systems	2.5	60
PGDAC-103	Object Oriented Programming	5.5	105
PGDAC-104	Algorithms and Data Structure	4	90
PGDAC-105	Web Programming Technologies	4.5	105
PGDAC-106	Web-based Java Programming	4.5	105
PGDAC-107	Software Development Methodologies	4	90
PGDAC-108	Microsoft.Net Technologies	4	90
PGDAC-109	Database Technologies	3	75
PGDAC-110	Software Development Technologies	4	90
PGDAC-111	Project Management	3	90
PGDAC-112	Industry Suggested Topics	1	30
PGDAC-113	Project Work	3	45

Total Credits: 45

Module No.	Subject	Credits	No. of Lectures (hrs)
PGDAC-101	Hardware and Networking Fundamentals Concepts of Programming & Operating System Getting Started, Variables & Methods, Operators, Conditional and Looping Statements, Objects, Arrays, Introduction to OS, Introduction to Linux, Shell	2	45
PGDAC-102	Programming, Processes, Signals, Threads, Memory, management, Virtual Memory, Deadlock, Inter process communication Programming Languages and Basic C revision Algorithms and Data Structures (Windows/Linux C++) Object Oriented Programming (Windows/Linux C++)	2.5	60
PGDAC-103	Object Oriented Programming with Java Features of Java, JVM Architecture, Primitive data types, Object Oriented Programming Concepts, Interfaces, Arrays, Garbage collection, Wrapper Classes and String Class, Exception Handling, java.io & java.nio Package, Object Class & java.util Package, Collections, MultiThreading, Synchronization, Inner Class, Lambada Expression, J2EE, J2ME	5.5	105
PGDAC-104	Algorithms and Data Structures Using Java Problem Solving & Computational Thinking, Algorithms & Data, Structures, Basic Data Structures, Linked List Data Structures, Recursion, Trees & Applications, Searching Algorithms, Sorting Algorithms, Hash Functions and Hash Tables, Graph & Applications, Algorithm Designs, Analysis of different type of Algorithms, Data Structure Implementation and Application	4	90
PGDAC-105	Web Programming Technologies Architecture of Web, HTML, Cascading Style Sheets (CSS), JavaScript, jQuery, JSON & Ajax, Node.js, XML, SAX, Node.js Asynchronous Programming, Node.js Modules, Introduction to Express, React, Introduction to React-Redux, Responsive Web Design & Web Security	4.5	105
PGDAC-106	Web-based Java Programming J2EE Overview, Servlets, JSP, Sessions, JDBC & Transaction Management, Hibernate Framework, Spring Framework, Spring Boot, Spring Data Module, Spring AOP, Building REST Services with Spring, Testing in Spring, Securing Web Application with Spring Security	4.5	105
PGDAC-107	Software Development Methodologies Git, Software Engineering, Software Development Life Cycle, Object Oriented Analysis and Design, Agile development model, Introduction to Atlassian Jira, Microservices, API gateway, DevOps, Containerization, Docker, YAML, Kubernetes, Software testing, Quality Assurance vs Quality Control vs Testing, STLC and V Model, Manual testing, Automation testing, Selenium , Jenkins, Introduction to Cloud, Cloud architecture, Service models: IaaS, PaaS, SaaS, Deployment models: Private, Public, Hybrid, Introduction to AWS	4	90
PGDAC-108	Microsoft.Net Technologies - .Net Framework, Visual Studio, C# Basics, Interfaces, Indexers, Generic classes, Collections, Delegates, Lambdas, Error Handling (Exceptions Handling), LINQ to objects, PLINQ, Files I/O and	4	90

Module No.	Subject	Credits	No. of Lectures (hrs)
	Streams, Threading Asp.Net MVC, MVC State Management, MVC Module, Data Management with ADO.NET, Understanding Routing & Request Life Cycle, Layouts, Bundle, Minification, MVC Security, Entity Framework, Understanding ASP.Net MVC Core, Windows Communication Foundation, Web APIs		
PGDAC-109	Database Technologies - DBMS, MySQL, Oracle 11g, MS Access, SQL Server, Database Design, Entity-Relationship Diagram, Codd's 12 rules for RDBMS, SQL, Categories of SQL Commands, Normalization, MySQL Data Types, Database Constraints, SQL Functions & Operators, Joins, Subquery, Views, Indexes, ACID Properties, Stored Procedures, Cursors, Triggers, Introduction to NoSQL, MongoDB, Introduction to Big Data	3	75
PGDAC-110	Software Development Technologies - Git, Software Engineering, Software Development Life Cycle, Object Oriented Analysis and Design, Agile development model, Introduction to Atlassian Jira, Microservices, API gateway, DevOps, Containerization, Docker, YAML, Kubernetes, Software testing, Quality Assurance vs Quality Control vs Testing, STLC and V Model, Manual testing, Automation testing, Selenium , Jenkins, Introduction to Cloud, Cloud architecture, Service models: IaaS, PaaS, SaaS, Deployment models: Private, Public, Hybrid, Introduction to AWS	4	90
PGDAC-111	Project Management (Windows/Linux Project)	3	90
PGDAC-112	Industry Suggested Topics (Case Studies)	1	30
PGDAC-113	Project Work	3	45