Ganpat University
॥ विद्यया समाजोत्कर्षः ॥

Faculty of Computer Applications

FACULTY OF COMPUTER APPLICATIONS

Programme	BCA Honors	**Branch**	Bachelor of Computer Applications
Semester	VI	**Version**	1.0.0.0
Effective from Academic Year	2026-2027	**Effective for the batch Admitted in**	June 2024
Subject Code	U36A1NJD	**Subject Name**	NEXT JS DEVELOPMENT

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2		2	-	2	Theory	50	50	100
Hours	2		4	-	6	Practical	-	-	-

Objective:

To enable students to leverage the Next.js framework to build high-performance, full-stack web applications with both server-side and client-side rendering capabilities.

Pre-requisites:

Students must have a strong foundation in HTML, CSS, and JavaScript (ES6+). Solid prior experience with **React JS**, including components, props, state (useState), and hooks (useEffect), is essential.

Course Outcomes :

Name of CO	**Description**
CO1	Understand the core architecture of Next.js, including the App Router, Server Components, and the development environment.
CO2	Implement robust and scalable routing solutions, including dynamic routes, nested layouts, and specialized UI files.
CO3	Apply various data fetching and rendering strategies, such as SSR, SSG, and ISR, to optimize application performance.
CO4	Develop backend functionality directly within Next.js using API Routes and handle form mutations efficiently with Server Actions.
CO5	Design, develop, and structure an intermediate full-stack project that integrates all core concepts of Next.js.

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	3	1	1	1	1	1	1	1
CO2	2	3	3	2	3	1	2	1	2	1	1	1
CO3	3	3	3	2	3	2	2	1	2	1	2	2
CO4	3	3	3	2	3	2	2	2	2	1	2	2
CO5	3	3	3	3	3	2	2	2	3	1	3	3

Content:

Unit		Hrs
1	**Introduction to Next.js** What is Next.js? Why use a framework?,Key Features: Server-Side Rendering (SSR), Static Site Generation (SSG),Setting up a Next.js Project (create-next-app), The App Router(Only basic Structure),Understanding the project structure,Server Components vs. Client Components: The fundamental paradigm shift.	6
2	**Routing and Layouts** Deep Dive into the App Router (Core Concepts of the App Router, Key Files and Their Purpose),Creating Dynamic Routes,What is Layouts? Root Layout and Nested Layouts,Page Templates Specialized UI: Loading UI (loading.js) and Error Handling (error.js), Linking and Navigating between routes.	6
3	**Data Fetching and Rendering Strategies** Data Fetching in Server Components using fetch,Static Data Fetching (default behavior),Dynamic Rendering (opting out of caching), Caching and Revalidation (time-based and on-demand), Streaming with Suspense for better UX.	6
4	**Backend Functionality in Next.js** Creating API endpoints with API Routes,Handling different HTTP methods (GET, POST, etc.),Route Handlers and dynamic API segments, Introduction to Server Actions for form submissions and data mutations, Progressive Enhancement with Server Actions.	6
5	**Intermediate Project: Building a Blog Platform** Project Planning and Structuring in Next.JS,Building the UI: Creating the main layout, post list page, and single post page,Data Fetching: Statically generating blog posts from a local file or headless CMS,Interactivity: Building a comment form and handling submissions using Server Actions.	6

Practical Content:

List of programs/mini-projects specified by the subject teacher based on above mentioned

topics. Emphasis on hands-on coding exercises for each concept.	
Text Books:	
1	**Next.js by Vercel** - The official, interactive learning platform: https://nextjs.org/learn
Reference Books:	
1	The Next.js Handbook by Flavio Copes. (Frequently updated e-book)
2	Real-World Next.js by Ramazan ROVSHANOV.
3	Udemy - Next.js 14 & React - The Complete Guide by Maximilian Schwarzmüller.
Web References / MOOC / Certification Course	
1	Official Next.js Documentation: https://nextjs.org/
2	Vercel's YouTube Channel (for tutorials and updates): https://www.youtube.com/c/VercelHQ
3	https://www.coursera.org/learn/introduction-to-next-js
4	Fireship.io - Next.js Course: https://fireship.io/courses/nextjs/
5	https://www.edx.org/learn/node-js/technische-universitat-munchen-web-app-development-with-the-power-of-node-js
Question Paper Scheme:	
End Semester Examination Duration: (2 Hours Theory Examination) **Note for Examiner:** - Q-1 Any Five out of Seven (25 Marks) Q-2 Any Two out of Three (06 Marks) Q-3 Mandatory question (05 Marks) Q-4 Any Two out of Three (08 Marks) Q-5 Any Two out of Three (06 Marks) *The question paper must comprehensively address all Course Outcomes (COs), align Taxonomy levels, and ensure complete syllabus coverage.*	