

BHAKTA KAVI NARSINH MEHTA UNIVERSITY**Major/Minor****Syllabus of B.C.A & B.Sc. (IT) (Honors) as per NEP-2020****Faculty of Science****Effective from June 2026****Subject: Computer Science****SEMESTER- VIII****SUMMARY OF THE SYLLABUS**

Sem No.	Sr. No.	Category of Course	Course Title	Course Level	Credit	Teaching Hrs.	SEE Marks	CCE Marks	Total Marks	Exam Duration
Sem-8	1	Major-20	Frontend Development using Angular And Node.js (Theory)	6.0	Theory – 04	Theory – 60	50	50	100	2:00 Hrs
Sem-8	2	Major-21	Frontend Development using Angular And Node.js (Practical)	6.0	Practical – 04	Practical – 120	50	50	100	2:00 Hrs
	3	Major-22	Advanced Networking and Cyber Security	6.0	Theory – 03 Practical – 01	Theory – 45 Practical – 30	50	50	100	2:00 Hrs
	4	Minor-8	Digital Marketing and Search Engine Optimization (SEO)	6.0	Theory – 03 Practical – 01	Theory – 45 Practical – 30	50	50	100	2:00 Hrs
	5	OJT	On the Job Training (OJT)	6.0	06	-	As Per BKNM University Guideline			
	OR									
	5	MDSC-02	In-House Project	6.0	Practical – 04	Practical – 120	50	50	100	2:00 Hrs
		MDRC-02	Foundations of UI/UX Design	6.0	Theory – 02	Theory – 30	25	25	50	1:00 Hrs

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Note: Honours students not undergoing research, will do either OJT of 12 credits in major course relevant industry in 7th and 8th semester OR 12 credits (6 credits in 7th Semester and 6 credits in 8th semester) of Major/Minor discipline relevant courses (1 subject of Major/Minor discipline relevant of 4 credits and 1 subject of Major/Minor discipline relevant SEC course of 2 credits in each semester) in lieu of a research project, which will award honours degree to the students. Student can choose these courses from the pool of courses available in same or different institutions.

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Course Level	6.0	Internal Marks	50
Programme	Bachelor of Computer Application	External Marks	50
Semester	8	Practical Internal	0
Category of Course	Major-20	Practical External	0
Course Credit	4	Prac. External Exam Duration	-
Teaching Hours	Theory-60 Practical-0	Total	100
Course Code		Exam Duration	2:00 Hrs
Course Title	Frontend Development using Angular And Node.js (Theory)		

Objectives:

- Build a strong foundation in Angular framework concepts and architecture.
- Develop practical skills in creating reusable components, services, and modules.
- Gain proficiency in TypeScript as applied within Angular applications.
- Implement data binding, directives, and pipes for dynamic UI development.
- Design and manage navigation using Angular routing and lazy loading.
- Handle HTTP communication and integrate Angular applications with backend APIs.
- Develop secure applications using authentication mechanisms and route protection.
- Apply performance optimization techniques and build full-stack applications using MEAN architecture.

Outcomes:

- Ability to develop structured Angular applications using components, modules, and services. Proficiency in using TypeScript features within Angular projects.
- Capability to implement data binding, directives, and pipes effectively.
- Skill in configuring routing, lazy loading, and navigation in Angular applications.
- Ability to perform HTTP operations and integrate frontend with REST APIs.
- Competence in building and validating forms using template-driven and reactive approaches.
- Understanding of authentication workflows using JWT, route guards, and interceptors.
- Ability to optimize performance and develop a basic full-stack MEAN application.

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Subject: **Computer Science****SEMESTER- VIII****Course Contents**

UNIT		Hours
Unit 1 Fundamentals & Core Concepts of AngularJS	• Introduction to Angular ○ What is AngularJS ○ Features and advantages ○ SPA (Single Page Application) concept ○ MVC Architecture (Model, View, Controller) • Environment Setup & First Application ○ Installation via CDN / Setup ○ Basic AngularJS application structure ○ First AngularJS program (Hello World) • AngularJS Basics ○ Expressions and Syntax ○ Modules (angular.module) ○ Controllers ○ Scope (\$scope) • Data Binding ○ One-way binding ○ Two-way data binding ○ Interpolation ({{ }}) • Directives (Core Concept) ○ Built-in directives: • ng-app, ng-model, ng-bind • ng-repeat, ng-if, ng-show ○ Custom directives (basic idea) • Filters ○ Built-in filters (currency, date, filter, orderBy) ○ Creating custom filters	15
Unit 2 Advanced AngularJS & Application Development	• Forms and Validation ○ Form controls ○ Form states (\$valid, \$invalid, \$touched) ○ Input validation techniques • Events and DOM Handling ○ AngularJS events (ng-click, ng-change) ○ DOM manipulation basics • Services ○ Built-in services (\$http, \$timeout) ○ Custom services ○ Introduction to REST API calling	15

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	• Dependency Injection ○ Concept and importance ○ Injecting services into controllers • Routing ○ Single Page Navigation ○ ngRoute module ○ Route configuration	
Unit 3 Node.js Core Modules & Server Development	• Node.js Modules (Core Concept) ○ CommonJS (require, module.exports) ○ Node Architecture ○ ES6 Modules (import, export) ○ Default & Named Exports ○ Module Caching • Core Modules in Node.js ○ File System (fs) → read/write files ○ HTTP Module → create server ○ OS Module → system info ○ Path Module • File System (fs Module – Practical) ○ Read file (readFile) ○ Write file (writeFile) ○ Append file ○ Delete file • Creating Server using HTTP Module ○ http.createServer() ○ Request (req) & Response (res) ○ Server setup & port handling • Event-Driven Architecture ○ Event Loop ○ EventEmitter ○ Async Programming	15
Unit 4 Express.js & Application Development	• Introduction to Express.js ○ What is Express ○ Why use Express over HTTP ○ Installation & setup • Routing in Node.js / Express ○ Routing using HTTP module ○ Routing using Express ○ app.get(), app.post() • Middleware in Express ○ What is middleware	15

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	○ Types: • Application-level • Router-level ○ Request processing flow ○ Node.js API Authentication • Handling Requests & Responses ○ req object ○ res object ○ Sending JSON & HTML responses • REST API Development ○ CRUD operations ○ HTTP Methods and Their Usage ○ GET, POST, PUT, DELETE ○ API structure • Database Integration (Basic Idea) ○ Install MongoDB Driver ○ Connecting Node.js with MongoDB ○ Creating a Database, Creating a Collection ○ MongoDB Insert / Fetch data ○ MongoDB Find, MongoDB Query , MongoDB Sort , MongoDB Delete	
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Suggested Reading:

References Book:

- Angular Up & Running – Shyam Seshadri
- Learning Angular – Aristeidis Bampakos & Pablo Deeelman
- Pro Angular – Adam Freeman
- ng-book: The Complete Guide to Angular – Nathan Murray et al.

Web site References:

- <https://angular.io/>
- <https://nodejs.org/docs/latest/api/>
- <https://rxjs.dev/guide/overview>
- <https://expressjs.com/en/guide/routing.html>
- <https://www.geeksforgeeks.org/angular-js/angular-tutorial/>

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Course Level	6.0	Internal Marks	00
Programme	Bachelor of Computer Application	External Marks	00
Semester	8	Practical Internal	50
Category of Course	Major-21	Practical External	50
Course Credit	4	Prac. External Exam Duration	2:00 Hrs
Teaching Hours	Theory-0 Practical-120	Total	100
Course Code		Exam Duration	-
Course Title	Frontend Development using Angular And Node.js (Practical)		

Objectives:

- Build a strong foundation in Angular framework concepts and architecture.
- Develop practical skills in creating reusable components, services, and modules.
- Gain proficiency in TypeScript as applied within Angular applications.
- Implement data binding, directives, and pipes for dynamic UI development.
- Design and manage navigation using Angular routing and lazy loading.
- Handle HTTP communication and integrate Angular applications with backend APIs.
- Develop secure applications using authentication mechanisms and route protection.
- Apply performance optimization techniques and build full-stack applications using MEAN architecture.

Outcomes:

- Ability to develop structured Angular applications using components, modules, and services. Proficiency in using TypeScript features within Angular projects.
- Capability to implement data binding, directives, and pipes effectively.
- Skill in configuring routing, lazy loading, and navigation in Angular applications.
- Ability to perform HTTP operations and integrate frontend with REST APIs.
- Competence in building and validating forms using template-driven and reactive approaches.
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	○ Introduction to REST API calling • Dependency Injection ○ Concept and importance ○ Injecting services into controllers • Routing ○ Single Page Navigation ○ ngRoute module ○ Route configuration	
Unit 3 Node.js Core Modules & Server Development	• Node.js Modules (Core Concept) ○ CommonJS (require, module.exports) ○ Node Architecture ○ ES6 Modules (import, export) ○ Default & Named Exports ○ Module Caching • Core Modules in Node.js ○ File System (fs) → read/write files ○ HTTP Module → create server ○ OS Module → system info ○ Path Module • File System (fs Module – Practical) ○ Read file (readFile) ○ Write file (writeFile) ○ Append file ○ Delete file • Creating Server using HTTP Module ○ http.createServer() ○ Request (req) & Response (res) ○ Server setup & port handling • Event-Driven Architecture ○ Event Loop ○ EventEmitter ○ Async Programming	30
Unit 4 Express.js & Application Development	• Introduction to Express.js ○ What is Express ○ Why use Express over HTTP ○ Installation & setup • Routing in Node.js / Express ○ Routing using HTTP module ○ Routing using Express ○ app.get(), app.post() • Middleware in Express	30

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	○ What is middleware ○ Types: • Application-level • Router-level ○ Request processing flow ○ Node.js API Authentication • Handling Requests & Responses ○ req object ○ res object ○ Sending JSON & HTML responses • REST API Development ○ CRUD operations ○ HTTP Methods and Their Usage ○ GET, POST, PUT, DELETE ○ API structure • Database Integration (Basic Idea) ○ Install MongoDB Driver ○ Connecting Node.js with MongoDB ○ Creating a Database, Creating a Collection ○ MongoDB Insert / Fetch data ○ MongoDB Find, MongoDB Query , MongoDB Sort , MongoDB Delete	
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- Angular Up & Running – Shyam Seshadri
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- Pro Angular – Adam Freeman
- ng-book: The Complete Guide to Angular – Nathan Murray et al.

Web site References:

- <https://angular.io/>
- <https://nodejs.org/docs/latest/api/>
- <https://rxjs.dev/guide/overview>
- <https://expressjs.com/en/guide/routing.html>
- <https://www.geeksforgeeks.org/angular-js/angular-tutorial/>

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Programme	Bachelor of Computer Application		External Marks	50
Semester	8		Practical Internal	25
Category of Course	Major-22		Practical External	0
Course Credit	4		Prac. External Exam Duration	-
Teaching Hours	Theory- 45 Practical-30		Total	100
Course Code			Exam Duration	2:00 Hrs
Course Title	Advanced Networking and Cyber Security			

Objectives:

- Build a strong foundation in network security principles and penetration testing workflows.
- Develop hands-on skills in setting up and managing a penetration testing lab environment.
- Gain practical experience in reconnaissance, scanning, and enumeration techniques.
- Explore vulnerability assessment and exploitation using industry-standard tools.
- Understand web application security concepts and OWASP Top 10 risks.
- Practice identifying and exploiting common web vulnerabilities such as SQL Injection and XSS.
- Learn API security testing methods and common API attack vectors.
- Introduce governance, risk management, and compliance concepts relevant to cybersecurity.

Outcomes:

- Ability to configure and use a penetration testing lab with Kali Linux and vulnerable systems.
- Proficiency in performing information gathering, scanning, and service enumeration.
- Capability to identify and exploit system vulnerabilities using tools like Metasploit.
- Skill in testing web applications for common vulnerabilities using Burp Suite.
- Understanding of exploiting authentication flaws, injection attacks, and client-side issues.
- Ability to assess API security risks including authorization flaws and data exposure.
- Practical knowledge of post-exploitation techniques in controlled environments.

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Course Contents

Unit	Content	Teaching Hours
Unit 1 Network Security & Penetration Testing	• Network Security and Penetration Testing Overview • Penetration Testing Methodology • Software Installation and Configuration ○ Kali Linux Installation and Setup ○ Metasploitable Installation and Setup • Information Gathering ○ Passive Information Gathering ○ Active Information Gathering • Scanning & Enumeration ○ Network scanning using Nmap ○ Service enumeration ○ Vulnerability scanning using Nmap, Nessus, Nikto • Exploitation ○ Exploit Vulnerabilities with Metasploit Framework ○ MSF modules & Payload ○ Hack Win 7 with msf payload ○ Reverse shell/bind shell • Post Exploitation ○ Privilege escalation basics ○ Data exfiltration • Clearing tracks • Report writing	15
Unit 2 Web Application Penetration testing	• Web Security Basics ○ HTTP/HTTPS fundamentals ○ Web Pentesting Methodology ○ OWASP Top 10 • Burp Suite Fundamentals ○ Using Burp Suite ○ Proxy, Repeater, Intruder basics • Authentication Testing ○ Brute force attacks ○ Session management flaws • Injection Attacks ○ SQL Injection	10

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	○ Command Injection • Client-Side Attacks ○ Cross-Site Scripting (XSS) ○ DOM-based vulnerabilities • File Upload Vulnerabilities ○ Unrestricted file upload ○ Bypass techniques • Security Misconfiguration ○ Default credentials ○ Improper headers • Writing web pentest reports	
Unit 3 API Security Testing	• Lab Setup and Environment Configuration ○ API testing tools (Postman, Burp Suite) ○ Setting up vulnerable APIs • API Enumeration ○ Endpoint discovery ○ Understanding request/response structures • API Security Risks (OWASP API Top 10) ○ Broken Object Level Authorization(BOLA) ○ Broken Function Level Authorization(BFLA) ○ Rate limiting issues • API Attacks ○ Authentication bypass ○ Token manipulation ○ Injection in APIs ○ Improper input validation ○ Excessive Data Exposure • Writing API Pentest report	10
Unit 4 GRC (Governance, Risk, and Compliance)	• Governance ○ Security policies ○ Roles & responsibilities • Risk Management ○ Risk identification & assessment ○ Risk treatment strategies • Compliance ○ ISO 27001 ○ GDPR basics ○ Indian IT Act overview • Security Audits ○ Types of audits ○ Audit lifecycle	10

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	• Documentation & Reporting ○ Risk register ○ Compliance reports	
Practical		30

Reference Books:

- The Web Application Hacker's Handbook – Dafydd Stuttard & Marcus Pinto
- Penetration Testing: A Hands-On Introduction to Hacking – Georgia Weidman
- The Hacker Playbook 3 – Peter Kim
- Metasploit: The Penetration Tester's Guide – David Kennedy et al.
- OWASP Testing Guide (v4 or latest) – OWASP Foundation

Reference Websites:

- <https://owasp.org/>
- <https://tryhackme.com/>
- <https://www.hackthebox.com/>
- <https://portswigger.net/web-security>
- <https://nvd.nist.gov/>
- <https://kali.org/>
- <https://exploit-db.com/>

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Course Level	6.0	Internal Marks	25
Programme	Bachelor of Computer Application	External Marks	50
Semester	8	Practical Internal	25
Category of Course	Minor-8	Practical External	0
Course Credit	4	Prac. External Exam Duration	-
Teaching Hours	Theory-45 Practical-30	Total	100
Course Code		Exam Duration	2:00 Hrs
Course Title	Digital Marketing and Search Engine Optimization (SEO)		

Objectives:

- Understand the fundamentals of digital marketing, including its concepts, evolution from traditional marketing, key channels, and the marketing funnel with customer journey mapping.
- Develop knowledge of SEO principles, including search engine working, SERP structure, Google algorithms, and the difference between organic and paid results.
- Apply effective keyword research techniques by identifying keyword types, understanding search intent, analyzing competitors, and using keyword research tools.
- Implement on-page and technical SEO strategies such as optimizing title tags, meta descriptions, URL structures, site architecture, page speed, mobile usability, and Core Web Vitals.
- Analyze and execute off-page and local SEO techniques including backlink building, guest posting, local listings, NAP consistency, and review management.
- Design and manage digital marketing campaigns across SEM, social media, content marketing, email marketing, and affiliate/influencer marketing.
- Plan and optimize websites and e-commerce platforms using CMS tools, landing pages, conversion optimization, and advanced SEO strategies like voice search and AI integration.
- Measure and improve marketing performance using analytics tools, KPIs, campaign tracking, marketing automation, and hands-on practical implementation like website building and campaign execution.

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Outcomes:

- Explain core digital marketing concepts and differentiate between traditional and digital marketing, including understanding customer journeys and marketing funnels.
- Demonstrate understanding of SEO fundamentals by explaining search engine processes, SERP structure, and ranking factors.
- Perform keyword research effectively by identifying keyword types, analyzing search intent, and using industry tools for competitor analysis.
- Apply on-page and technical SEO techniques to optimize websites for better visibility, performance, and user experience.
- Execute off-page and local SEO strategies to improve domain authority, online presence, and local search rankings.
- Create and manage multi-channel digital marketing campaigns including SEM, social media, content, email, affiliate, and influencer marketing.
- Develop and optimize websites and e-commerce platforms using CMS tools, landing pages, and conversion optimization techniques.
- Analyze marketing performance and generate reports using analytics tools, KPIs, and automation techniques to improve campaign effectiveness.

Course Contents

UNIT		Hours
Unit 1 Digital Marketing and Search Engine Optimization (SEO)	Digital Marketing Basics: • What is Digital Marketing • Traditional vs Digital Marketing • Marketing Funnel & Customer Journey • Digital Marketing Channels Overview SEO Basics: • What is SEO • How Search Engines Work (Crawling, Indexing, Ranking) • Organic vs Paid Results • Google Algorithm Overview • SERP Basics Keyword Research: • Types of Keywords (Short-tail, Long-tail) • Search Intent • Competitor Analysis • Keyword Research Tools	15

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Unit 2 SEO Optimization Techniques	On-Page SEO: • Title Tag Optimization • Meta Description Writing • URL Structure • Header Tags • Image Optimization • Internal Linking • Schema Markup Technical SEO: • Website Structure • XML Sitemap • Robots.txt • Canonical Tags • Page Speed Optimization • Mobile-Friendly Design • Core Web Vitals Off-Page SEO: • Backlinks • Guest Posting • Social Bookmarking • Directory Submission • Influencer Outreach Local SEO: • Google Business Profile Optimization • NAP Consistency • Local Citations • Reviews Management	10
Unit 3 Digital Marketing Channels & Content Strategy	Search Engine Marketing (SEM): • Paid Advertising Basics • Campaign Types • Keyword Bidding Strategy • Ad Copywriting • Conversion Tracking Social Media Marketing (SMM): • Social Media Strategy • Content Planning • Organic vs Paid Marketing • Reels & Short Video Marketing • Ad Campaign Setup	10

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	Content Marketing: • Content Strategy • Blog Writing • Copywriting • Video Marketing • Storytelling Email Marketing: • Lead Generation • Email Automation • Sales Funnels • Email Campaign Strategy Content SEO: • Topic Clusters • E-E-A-T Concept • Content Audit	
Unit 4 Advanced Digital Marketing, Analytics & Applications	Advanced SEO: • International SEO • Voice Search Optimization • AI & SEO • Algorithm Updates Affiliate Marketing: • Affiliate Basics • Commission Models • Tracking & Reporting Influencer Marketing: • Finding Influencers • Collaboration Strategy • Campaign Planning E-commerce Marketing: • Marketplace Marketing • E-commerce SEO • Conversion Optimization Website Planning: • Domain & Hosting • Landing Pages • CMS Basics (WordPress) Analytics & Reporting: • Understanding KPIs • Traffic Analysis • Conversion Tracking • Google Analytics & Search Console • Campaign Reporting	10

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	Marketing Automation: • CRM Basics • Chatbots • Retargeting Strategy	
Practical		30

Suggested Reading:

References Book:

- Marketing Digital 2025: Innovative Strategies for a Connected World – Group Medina (2024)
- The Start-Up Founder's Guide to Digital Marketing – Pramod Maloo (2025)
- Digital Marketing for Dummies (2025 Edition) – Ryan Deiss & Russ Henneberry
- Digital Marketing: Strategy, Implementation & Practice – Dave Chaffey & Fiona Ellis-Chadwick
- SEO Workbook (Latest Edition) – Jason McDonald

Web site References:

- Google Digital Garage – <https://learndigital.withgoogle.com/digitalgarage>
- HubSpot Academy – <https://academy.hubspot.com>
- Moz – <https://moz.com/learn/seo>
- SEMrush Academy – <https://www.semrush.com/academy>
- Neil Patel Blog – <https://neilpatel.com/blog>

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INTERNAL EVALUATION SCHEME		
NO	Particulars	Marks
1	Mid Semester Exam (Mandatory)	25
2	Class Test	05
3	Open book exam/test	05
4	Open note exam/test	05
5	Self-test/ Online test	05
6	Essay/Article writing	05
7	Quizzes/Objective test	05
8	Class assignment	05
9	Home assignment	05
10	Reports Writing	05
11	Research/Dissertation	05
12	Case Studies	05
13	Viva/Oral exam	05
14	Group Discussion	05
15	Role Play	05
16	Paper presentation/Seminar	05
17	Language Lab work	05
18	Interview	05
19	Craft work	05
20	Co-curricular work	05
21	Field Assignment	05
22	Poster Presentation	05
23	Attendance	05
24	Project Work	05
	Total	50

Note: Sr.No.1 is mandatory. Select any five from Sr.No.2 to 24. Each Contains five marks. Student should secure 18 Marks for passing in internal Exam.

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Paper Style

Ques. No.	Particulars	From which Unit	Marks
1	Questions (Any Two Out Of Four)	1	10
2	Questions (Any Two Out Of Four)	2	10
3	Questions (Any Two Out Of Four)	3	10
4	Questions (Any Two Out Of Four)	4	10
5	Questions (Any Two Out Of Four)	From Each Unit	10
		Total Marks	50

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SUMMARY OF THE SYLLABUS

Sem No.	Sr. No.	Category of Course	Course Title	Course Level	Credit	Teaching Hrs.	SEE Marks	CCE Marks	Total Marks	Exam Duration
8	1	MDSC-02	In-House Project	6.0	Practical – 04	Practical – 120	50	50	100	2:00 Hrs
	2	MDRC-02	Foundations of UI/UX Design	6.0	Theory – 02	Theory – 30	25	25	50	1:00 Hrs

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Course Contents

Module	Content	Hours
1	Project Development (In House) With any of the Minor or Major Subject Basics.	120

Suggestive assessment scheme:

Component	Marks	Type
Internal Practical	25	Proposal, Flowcharts and Diagrams, attendance
	25	Code Implementation and Testing
External Practical	50	Final report, viva, project presentation

Guidelines:

- Project must be developed in the computer laboratory of concern institute under the supervision of faculties of concern institute on any subject of previous semester or current semester.
- At the time of Project-Viva examination student must show all the Workouts, SDLC, Documentation, Program codes and project in running mode.
- The guide shall monitor progress of the student continuously. A student is required to present the progress of the Project work during the semester as per the schedule provided by the Guide.
- Student has to submit a hard copy of Project Report, workbook and a copy of Minor Project as per guide suggestion.
- Project submission should follow the guide's schedule, with a mandatory live demonstration during the viva, supported by a multimedia presentation.

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Course Level	6.0	Internal Marks	25
Programme	Bachelor of Computer Application	External Marks	25
Semester	8	Practical Internal	00
Category of Course	MDRC-02	Practical External	00
Course Credit	2	Prac. External Exam Duration	-
Teaching Hours	Theory-30 Practical-00	Total	50
Course Code		Exam Duration	1:00 Hrs
Course Title	Foundations of UI/UX Design		

Objectives:

- To understand the fundamental concepts of UI and UX, including their differences and the role of a UI/UX designer in the industry.
- To apply basic design principles such as alignment, spacing, balance, color theory, and typography in interface design.
- To develop an understanding of user-centered design by creating user personas and mapping simple user journeys.
- To explore basic UX research methods like surveys and interviews to identify user needs and problems.
- To understand the structure of digital design through navigation systems, sitemaps, and user/task flows.
- To create wireframes and plan layouts using low-fidelity and high-fidelity design approaches.
- To apply the design thinking process for problem-solving, including ideation, prototyping, and testing.
- To gain hands-on experience with design tools such as Figma, Adobe Photoshop, Illustrator, and CorelDRAW for creating UI designs.
- To design user interfaces using visual design principles, UI components, design systems, and interaction design concepts.
- To develop responsive, accessible, and user-friendly designs, test usability, and build a complete UI/UX project with prototype and case study for portfolio development.

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Outcomes:

- Students will be able to explain the concepts of UI and UX, their differences, and the role of UI/UX designers in real-world applications.
- Students will be able to apply basic design principles such as alignment, spacing, color combinations, and typography in interface design.
- Students will be able to analyze user needs using user-centered design approaches, including personas and user journeys.
- Students will be able to conduct basic UX research using simple methods like surveys and interviews to identify user problems.
- Students will be able to design structured interfaces using navigation systems, sitemaps, and user flows.
- Students will be able to create wireframes and prototypes using design tools like Figma and other software.
- Students will be able to design interactive, consistent, and visually appealing user interfaces using UI components and design systems.
- Students will be able to develop responsive, accessible, and user-friendly designs, perform usability testing, and present a complete UI/UX case study and project portfolio.

Course Contents

UNIT		Hours
Unit 1 UX Foundations & Design Basics	• Introduction to UI & UX ○ Meaning of UI and UX ○ Difference between UI and UX ○ Role of UI/UX designer in industry • Basic Design Principles ○ Alignment, spacing, balance ○ Color basics and combinations ○ Typography basics • Understanding Users (UX Basics) ○ User-centered design (simple idea) ○ User persona (basic) ○ User journey (simple flow) • UX Research Basics (Industry Topic) ○ Simple research methods (survey, interview) ○ Finding user problems • Structure of Design ○ Navigation design	15

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	○ Sitemap basics ● User Flow (Industry Topic) ○ Task flow and user flow (basic idea) ● Wireframing ○ Low and high level wireframes ○ Layout planning ● Design Thinking ○ Understand user ○ Define problem ○ Generate ideas ○ Design solution ○ Test design ● Introduction to Design Software ○ Overview of tools like Figma, Adobe Photoshop, Adobe Illustrator, CorelDRAW or Any other available Open-Source tools ○ Use of each tool ● Introduction to Design Tool ○ Basic interface ○ Creating simple screens	
Unit 2 UI Design, Prototyping & Industry Practice	● Visual Design Fundamentals ○ Color and typography usage ○ Layout and spacing ● UI Elements & Components ○ Buttons, forms, cards, menus ○ Design consistency ● Design System Basics ○ Reusable components ○ Maintaining consistency ● Interaction Design ○ User actions and feedback ○ Basic animations ● Prototyping ○ Linking screens ○ Clickable design ● Responsive Design ○ Mobile vs desktop design ○ Layout changes ● Usability Testing ○ What is usability	15

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	○ Simple testing methods ● Accessibility Basics ○ Easy-to-use design ○ Color and readability rules ● Case Study & Portfolio ○ Study of popular apps ○ Create simple case study	
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Suggested Reading:

References Book:

- Don Norman – The Design of Everyday Things
- Steve Krug – Don't Make Me Think
- Alan Cooper – About Face: UI Design

Web site References:

- <https://www.figma.com/>
- <https://www.interaction-design.org/>
- <https://www.nngroup.com/>

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INTERNAL EVALUATION SCHEME		
NO	Particulars	Marks
1	Mid Semester Exam (Mandatory)	13
2	Class Test	03
3	Open book exam/test	03
4	Open note exam/test	03
5	Self-test/ Online test	03
6	Essay/Article writing	03
7	Quizzes/Objective test	03
8	Class assignment	03
9	Home assignment	03
10	Reports Writing	03
11	Research/Dissertation	03
12	Case Studies	03
13	Viva/Oral exam	03
14	Group Discussion	03
15	Role Play	03
16	Paper presentation/Seminar	03
17	Language Lab work	03
18	Interview	03
19	Craft work	03
20	Co-curricular work	03
21	Field Assignment	03
22	Poster Presentation	03
23	Attendance	03
24	Project Work	03
	Total	25
Note: Sr.No.1 is mandatory. Select any Four from Sr.No.2 to 24. Each Contains three marks. Student should secure 09 Marks for passing in internal Exam.		

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Paper Style

Ques. No.	Particulars	From which Unit	Marks
1	Questions (Any Two Out Of Four)	1	10
2	Questions (Any Two Out Of Four)	2	10
3	Questions (Any One Out Of Two)	From Each Unit	5
		Total Marks	25