



International
Curriculum
for **ICT**

EMETACK STUDY CURRICULUM

www.emetack.com



COMPUTER AIDED GRAPHIC DESIGNING

This course provides an in-depth exploration of graphic design using industry-standard software from the Adobe Creative Suite. Students will gain practical skills in various design disciplines, including digital illustration, photo editing, and layout design. The course emphasizes both technical proficiency and creative problem-solving, preparing students to produce professional-quality graphic materials.

COURSE OBJECTIVES

- To familiarize students with the Adobe Creative Suite and its applications in graphic design.
- To develop foundational skills in key graphic design software such as Photoshop, Illustrator, Fireworks, and InDesign.
- To enable students to apply design principles effectively in their projects.
- To encourage creativity and innovation through hands-on design projects and critiques.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Navigate the Adobe Suite:** Demonstrate proficiency in using the Adobe Creative Suite, including understanding interfaces and file formats.
2. **Manipulate Images:** Apply various image manipulation techniques in Photoshop, including working with layers and masks.

3. **Create Vector Graphics:** Utilize Illustrator tools to create and modify vector graphics, including shapes and paths.
4. **Design for Web:** Create optimized web graphics using Fireworks, focusing on interactive design elements.
5. **Layout Documents:** Develop professional layouts in InDesign, employing text frames, images, and master pages.
6. **Apply Design Principles:** Implement color theory, typography, and composition techniques in design projects.
7. **Produce Diverse Materials:** Design a variety of graphic products, including logos, calendars, business cards, posters, flyers, and brochures.
8. **Edit Photos:** Use advanced photo editing techniques to enhance images and create composites.
9. **Utilize Templates:** Customize and create templates for efficient design processes.
10. **Prepare for Print:** Prepare and export design files for professional printing, understanding resolution and DPI considerations.
11. **Build a Portfolio:** Create a cohesive design portfolio that showcases a range of projects effectively.
12. **Engage in Critique:** Participate in feedback sessions, demonstrating the ability to give and receive constructive critiques.
13. **Stay Current:** Analyze and adapt to current trends in graphic design, incorporating contemporary styles and technologies.
14. **Illustrate Digitally:** Execute digital illustrations using advanced techniques in Photoshop and Illustrator.
15. **Solve Design Problems:** Employ creative problem-solving strategies to overcome design challenges, supported by case studies.

COURSE TOPICS

1. Introduction to Adobe Suite
2. Photoshop Basics
3. Illustrator Fundamentals
4. Fireworks Essentials
5. InDesign Basics
6. Graphic Design Principles
7. Logo Designing
8. Calendar Designing
9. Card Designing
10. Posters Design
11. Flyer Creation
12. Brochure Design
13. Photo Editing Techniques
14. Using Templates
15. Exporting and Printing
16. Design Portfolio Development
17. Feedback and Critique Sessions
18. Current Trends in Graphic Design
19. Digital Illustration Techniques
20. Creative Problem-Solving in Design

TOPIC 1: Introduction to Adobe Suite

- Overview of Adobe Creative Suite (CS3 or CS6)
- Interface navigation and toolbars
- Understanding file formats (JPEG, PNG, PSD, AI, INDD)

TOPIC 2: Photoshop Basics

- Image manipulation techniques
- Working with layers and masks
- Basic photo editing tools (crop, resize, adjust colors)

TOPIC 3: Illustrator Fundamentals

- Vector graphics vs. raster graphics
- Creating shapes and paths
- Using the Pen tool and Bezier curves

TOPIC 4: Fireworks Essentials

- Web graphics creation
- Interactive design elements
- Optimizing images for the web

TOPIC 5: InDesign Basics

- Document setup and layout design
- Working with text frames and images
- Master pages and styles for consistency

TOPIC 6: Graphic Design Principles

- Color theory and its application
- Typography basics and font selection
- Composition and visual hierarchy

TOPIC 7: Logo Designing

- Concept development and brainstorming
- Sketching and refining logo ideas

- Digitalizing logos in Illustrator

TOPIC 8: Calendar Designing

- Designing layout grids
- Incorporating images and branding
- Finalizing designs for print

TOPIC 9: Card Designing

- Business Card Design: dimensions and layout
- Wedding Card Design: themes and styles
- Greeting Card Design: seasonal concepts and typography

TOPIC 10: Posters Design

- Designing eye-catching posters
- Understanding target audience and messaging
- Layout techniques and visual balance

TOPIC 10: Flyer Creation

- Elements of effective flyer design
- Incorporating call-to-action and branding
- Printing considerations for flyers

TOPIC 11: Brochure Design

- Types of brochures (tri-fold, bi-fold)
- Content organization and layout strategies
- Designing visually appealing brochures in InDesign

TOPIC 11: Photo Editing Techniques

- Basic adjustments (brightness, contrast, saturation)
- Advanced techniques (retouching, cloning, healing)
- Creating composites and special effects

TOPIC 12: Using Templates

- Finding and customizing templates
- Benefits of using templates in design
- Creating your own templates for future projects

TOPIC 13: Exporting and Printing

- Best practices for exporting designs
- Understanding DPI and resolution for print
- Preparing files for professional printing

TOPIC 14: Design Portfolio Development

- Building a cohesive portfolio
- Showcasing projects effectively
- Presenting work to potential clients or employers

TOPIC 15: Feedback and Critique Sessions

- Importance of constructive feedback
- How to give and receive critiques
- Iterating on designs based on feedback

TOPIC 16: Current Trends in Graphic Design

- Exploring contemporary design styles and trends
- Analyzing popular design influences
- Adapting to industry changes and technology advancements

TOPIC 17: Digital Illustration Techniques

- Exploring digital painting and illustration
- Creating illustrations in Illustrator and Photoshop
- Techniques for character and concept art

TOPIC 18: Creative Problem-Solving in Design

- Strategies for overcoming design challenges
- Encouraging creativity and innovation
- Case studies of successful designs and their processes



COMPUTER APPLICATIONS AND OFFICE PRACTICE

This course introduces students to essential computer applications and office practices using the Microsoft Office Suite. Covering key software tools, including Word, PowerPoint, Excel, Publisher, and Access, the course equips students with practical skills for effective communication, data management, and presentation. Ideal for anyone seeking to enhance their office productivity and digital literacy.

COURSE OBJECTIVES

- To provide a comprehensive overview of the Microsoft Office Suite and its applications in professional settings.
- To develop proficiency in creating and managing documents, presentations, spreadsheets, publications, and databases.
- To enhance students' ability to collaborate and communicate effectively using digital tools.
- To foster critical thinking and problem-solving skills through hands-on projects and practical exercises.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Navigate Microsoft Office:** Demonstrate familiarity with the Microsoft Office Suite, including basic functionalities of each application.
2. **Create Documents:** Produce and format professional documents in Microsoft Word, utilizing templates, styles, and collaboration tools.

3. **Design Presentations:** Create engaging presentations in Microsoft PowerPoint, incorporating multimedia elements and effective design techniques.
4. **Analyze Data:** Utilize Microsoft Excel for data entry, basic functions, and advanced features like pivot tables and data analysis tools.
5. **Produce Publications:** Design brochures, flyers, and newsletters in Microsoft Publisher, understanding layout design and print settings.
6. **Manage Databases:** Create and manage databases in Microsoft Access, including designing tables, relationships, queries, and reports.
7. **Utilize Collaboration Tools:** Apply collaborative features in Word and Publisher to work effectively with others on shared projects.
8. **Present Effectively:** Use presentation skills and techniques to deliver compelling and informative presentations.
9. **Analyze Data Visually:** Create charts and graphs in Excel to represent data visually, enhancing comprehension and presentation.
10. **Import and Export Data:** Import and export data in Access, understanding how to integrate information from various sources.

COURSE TOPICS

1. Word Processor (Microsoft Word)
2. Presentation (Microsoft PowerPoint)
3. Spreadsheet (Microsoft Excel)
4. Publication (Microsoft Publisher)
5. Database (Microsoft Access)

- Introduction to Computer Applications
- Overview of Microsoft Office Suite

TOPIC 1: Word Processor (Microsoft Word)

- Document creation and formatting
- Using templates and styles
- Inserting images, tables, and graphics
- Mail merge and document collaboration
- Reviewing and editing tools (comments, track changes)

TOPIC 2: Presentation (Microsoft PowerPoint)

- Creating and designing slides
- Using themes and templates
- Adding multimedia (images, videos, audio)
- Transitions and animations
- Delivering effective presentations (tips and techniques)

TOPIC 3: Spreadsheet (Microsoft Excel)

- Basic spreadsheet functions and formulas
- Data entry and formatting
- Creating charts and graphs
- Using pivot tables and data analysis tools
- Managing and organizing data with filters and sorting

TOPIC 4: Publication (Microsoft Publisher)

- Creating brochures, flyers, and newsletters
- Designing layouts and using templates
- Inserting and formatting text and images
- Understanding print settings and exporting options
- Collaborating on publication projects

TOPIC 5: Database (Microsoft Access)

- Creating and managing databases
- Designing tables and relationships
- Creating Queries
- Creating forms and reports
- Importing and exporting data from other sources

COMPUTER NETWORKING



This course provides a comprehensive introduction to computer networking, focusing on the fundamental concepts, protocols, and technologies essential for building and maintaining networks. Students will explore networking devices, IP addressing, network configuration, wireless networking, security practices, and troubleshooting techniques. Hands-on labs and practical activities will reinforce theoretical knowledge, preparing students for real-world networking challenges.

COURSE OBJECTIVES

- To introduce students to various networking devices and their functions.
- To develop skills in IP addressing and subnetting for effective network management.
- To teach the setup and security of both wired and wireless networks.
- To equip students with troubleshooting techniques for diagnosing and resolving network issues.
- To familiarize students with network simulation software for designing and testing network topologies.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Identify Networking Devices:** Recognize and describe the functions of routers, switches, and hubs.
2. **Configure Devices:** Successfully configure networking devices, including switches and routers, in a lab environment.

3. **Implement IP Addressing:** Calculate and implement IP addressing and subnetting plans to create efficient network segments.
4. **Set Up Networks:** Establish a local area network (LAN), assigning both static and dynamic IP addresses as needed.
5. **Secure Wireless Networks:** Research and implement security measures for wireless networks, including Wi-Fi standards and configuration of wireless routers.
6. **Understand Network Protocols:** Utilize network protocols effectively, employing packet sniffing tools to analyze traffic and data flow.
7. **Apply Network Security:** Discuss common security threats and implement firewall rules to protect network integrity.
8. **Troubleshoot Networking Issues:** Apply troubleshooting techniques and commands to diagnose and resolve connectivity issues in various scenarios.
9. **Use Simulation Software:** Design and simulate network topologies using network simulation software, enhancing understanding of network design and functionality.

COURSE TOPICS

1. Networking Devices
2. IP Addressing and Subnetting
3. Network Configuration
4. Wireless Networking
5. Network Protocols
6. Network Security
7. Troubleshooting Techniques
8. Network Simulation Software

Learning Objectives

1. Configure networking devices.
2. Implement IP addressing and subnetting.
3. Set up and secure wireless networks.
4. Troubleshoot networking issues.
5. Use network simulation software.

Key Topics and Activities

1. **Networking Devices**
 - Identify routers, switches, and hubs.
 - **Lab:** Configure a switch and router.
2. **IP Addressing and Subnetting**
 - Calculate subnets.
 - **Lab:** Implement a subnet plan.
3. **Network Configuration**
 - Set up a local area network (LAN).
 - **Lab:** Assign static and dynamic IP addresses.
4. **Wireless Networking**
 - Research Wi-Fi standards and security.
 - **Lab:** Configure a wireless router.
5. **Network Protocols**
 - Use packet sniffing tools.
 - **Lab:** Set up a web server.
6. **Network Security**
 - Discuss security threats.
 - **Lab:** Implement firewall rules.
7. **Troubleshooting Techniques**
 - Learn troubleshooting commands.
 - **Lab:** Diagnose connectivity issues.
8. **Network Simulation Software**
 - Introduction to simulation tools.
 - **Lab:** Design a network topology.



DATABASE PROGRAMMING

This course offers a comprehensive exploration of database programming, focusing on MySQL as a relational database management system. Students will learn to design, develop, and manage databases, employing SQL for data manipulation and querying. Through hands-on projects and real-world applications, participants will gain practical experience in implementing database solutions for various scenarios.

COURSE OBJECTIVES

- To introduce the fundamental concepts and importance of databases in modern applications.
- To equip students with skills in SQL, database design, and performance optimization.
- To explore advanced topics such as stored procedures, transactions, and security management.
- To enable students to integrate MySQL with programming languages for application development.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Understand Databases:** Explain the significance of databases, distinguishing between relational and non-relational types.
2. **Design Databases:** Apply database design principles, including normalization and entity-relationship modeling, to create efficient database structures.
3. **Utilize SQL Commands:** Execute basic SQL commands for data definition and manipulation, including creating, modifying, and querying databases and tables.

4. **Construct Advanced Queries:** Implement advanced SQL techniques, such as filtering, sorting, joining tables, and using aggregate functions effectively.
5. **Work with Functions and Procedures:** Create and manage functions and stored procedures to encapsulate business logic and improve database performance.
6. **Optimize Performance:** Analyze and optimize query performance through indexing and performance tuning techniques.
7. **Implement Transactions:** Understand and apply transactions, ensuring data integrity and effective concurrency control in applications.
8. **Manage Security:** Establish user roles and permissions in MySQL, implementing best practices for database security and protection against attacks.
9. **Integrate with Programming Languages:** Connect MySQL with programming languages (e.g., PHP, Python, Java), executing SQL queries from applications and handling errors.
10. **Utilize MySQL Tools:** Use MySQL Workbench and command-line tools for database administration, data import/export, and server performance monitoring.
11. **Develop Real-World Applications:** Build a fully functional application using MySQL, applying best practices in design, development, testing, and debugging.

COURSE TOPICS

1. Introduction to Databases
2. Database Design Principles
3. Basic SQL Commands
4. Advanced SQL Queries
5. Working with Functions and Stored Procedures
6. Indexing and Performance Tuning
7. Transactions and Concurrency Control
8. Security and User Management
9. Connecting MySQL with Programming Languages
10. Working with MySQL Tools
11. Real-World Application Development

TOPIC 1: Introduction to Databases

- Understanding databases and their importance
- Types of databases (relational vs. non-relational)
- Overview of MySQL and its features
- Installation and setup of MySQL server

TOPIC 2: Database Design Principles

- Overview of database normalization
- Entity-Relationship (ER) modeling
- Creating entity-relationship diagrams (ERDs)
- Defining primary and foreign keys
- Designing tables and relationships

TOPIC 3: Basic SQL Commands

- Introduction to SQL syntax and structure
- Data Definition Language (DDL) commands:
 - Creating databases and tables
 - Modifying and deleting tables
- Data Manipulation Language (DML) commands:
 - Inserting, updating, and deleting records
 - Using SELECT statements to query data

TOPIC 4: Advanced SQL Queries

- Filtering data with WHERE clauses
- Sorting results with ORDER BY
- Using JOINS (INNER, LEFT, RIGHT, FULL) to combine tables
- Aggregate functions (COUNT, SUM, AVG, MIN, MAX)
- Grouping results with GROUP BY and HAVING clauses

TOPIC 5: Working with Functions and Stored Procedures

- Understanding built-in functions (string, numeric, date/time)
- Creating and using user-defined functions
- Introduction to stored procedures and triggers
- Benefits of using stored procedures for business logic
- Practical examples of creating and managing stored procedures

TOPIC 6: Indexing and Performance Tuning

- Understanding the importance of indexing
- Creating and managing indexes
- Analyzing query performance (EXPLAIN command)
- Techniques for optimizing SQL queries
- Best practices for database performance tuning

TOPIC 7: Transactions and Concurrency Control

- Understanding transactions and ACID properties
- Implementing transactions in MySQL
- Isolation levels and their impact on concurrency
- Handling deadlocks and rollbacks
- Practical scenarios for using transactions in applications

TOPIC 8: Security and User Management

- Overview of user roles and permissions in MySQL
- Creating and managing database users
- Implementing security best practices (password policies, access control)
- Protecting against SQL injection attacks
- Regular database backups and recovery strategies

TOPIC 9: Connecting MySQL with Programming Languages

- Introduction to MySQL connectors for various languages (PHP, Python, Java)
- Establishing database connections
- Executing SQL queries from applications
- Handling errors and exceptions in database interactions
- Practical examples of integrating MySQL with applications

TOPIC 10: Working with MySQL Tools

- Overview of MySQL Workbench and its features
- Using command-line tools for MySQL administration
- Importing and exporting data (CSV, SQL dump)
- Monitoring and managing MySQL server performance
- Best practices for using MySQL tools effectively

TOPIC 11: . Real-World Application Development

- Building a sample application using MySQL
- End-to-end workflow from database design to application deployment

- Incorporating best practices in application development
- Testing and debugging database interactions
- Final project: Creating a fully functional application with MySQL backend



FUNDAMENTAL COMPUTER SKILLS

The **Fundamental Computer Skills** course is designed for adults seeking to enhance their computer literacy and confidence in using technology. This comprehensive course covers essential topics ranging from basic hardware and software concepts to practical skills such as word processing, internet usage, and online safety. Participants will engage in hands-on activities that foster a deeper understanding of computers and their applications in everyday life.

OBJECTIVES

The primary objectives of the Fundamental Computer Skills course are to:

1. Introduce Basic Computer Concepts:

- Familiarize learners with computer terminology, types of computers, and basic components.

2. Develop Software Proficiency:

- Equip participants with skills to navigate different operating systems and software applications effectively.

3. Enhance Internet Skills:

- Teach effective browsing techniques, online safety practices, and efficient information searching.

4. Cultivate Communication Skills:

- Enable learners to use email and communication tools professionally and effectively.

5. Promote Troubleshooting Abilities:

- Prepare participants to diagnose and resolve common computer issues independently.

6. Ensure Security Awareness:

- Raise awareness of security and privacy considerations in the digital age.

LEARNING OUTCOMES

Upon successful completion of the course, participants will be able to:

1. Identify Computer Components:

- Demonstrate an understanding of basic computer hardware and software concepts, including essential terminology.

2. Navigate Operating Systems:

- Effectively use Windows, macOS, and Linux, demonstrating proficiency in navigating their user interfaces.

3. Utilize Internet Tools:

- Employ effective browsing techniques and understand online safety measures to protect against cyber threats.

4. Create and Format Documents:

- Use word processing software to create, format, and edit documents, including inserting images and tables.

5. Design Simple Presentations:

- Develop basic presentations using tools like PowerPoint, applying design principles for clarity and impact.

6. Manage Files Efficiently:

- Organize and manage files and folders, understanding different file types and their uses.

7. Communicate Professionally:

- Set up and manage email accounts, applying best practices for professional communication.

8. Troubleshoot Common Issues:

- Identify and resolve common software and hardware problems, knowing when to seek further assistance.

9. Implement Security Best Practices:

- Recognize the importance of strong passwords, privacy settings, and safe internet practices to protect personal information.

10. Connect and Troubleshoot Wireless Devices:

- Set up and troubleshoot wireless cameras and other devices, understanding their basic technology.

COURSE TOPICS

1. Introduction to Computers
2. Basic Hardware and Software Concepts
3. Operating Systems Overview (Windows, macOS, Linux)
4. Using the Internet
5. Understanding Online Safety and Security
6. Word Processing
7. Basic Editing and Presentation Skills
8. Troubleshooting Common Software Issues
9. Email and Communication Tools
10. Basic Troubleshooting
11. File Management
12. Security and Privacy Considerations
13. Connecting Wireless Cameras
14. Dealing with Computer and Internet Security

COURSE CONTENT OUTLINE

1. Introduction to Computers

- Overview of Computer Systems
- Types of Computers (Desktops, Laptops, Tablets)
- Basic Terminology (CPU, RAM, Storage)

2. Basic Hardware and Software Concepts

- Understanding Hardware Components (Motherboard, Hard Drive, etc.)
- Types of Software (System Software vs. Application Software)
- Installing and Uninstalling Software

3. Operating Systems Overview

- Introduction to Operating Systems
- Key Features of Windows, macOS, and Linux
- Navigating the User Interface of Each OS

4. Using the Internet

- Understanding Internet Basics (ISP, Browsers)
- Effective Browsing Techniques
- Searching for Information Efficiently

5. Understanding Online Safety and Security

- Recognizing Threats (Viruses, Phishing, Malware)
- Safe Browsing Practices
- Importance of Firewalls and Antivirus Software

6. Word Processing

- Introduction to Microsoft Word (or similar)
- Creating and Formatting Documents
 - Text Formatting (Font, Size, Color)
 - Paragraph and Page Formatting
- Inserting Images and Tables

7. Basic Editing and Presentation Skills

- Using Editing Tools (Spell Check, Grammar Check)
- Creating Simple Presentations (e.g., PowerPoint)
- Slide Design Principles and Tips for Effective Presentations

8. Troubleshooting Common Software Issues

- Identifying Software Errors
- Basic Troubleshooting Steps
- Utilizing Help Resources and Online Support

9. Email and Communication Tools

- Setting Up and Managing Email Accounts (Gmail, Outlook)
- Composing, Sending, and Organizing Emails
- Best Practices for Professional Communication (Etiquette, Clarity)

10. Basic Troubleshooting

- Common Computer Issues (Slow Performance, Crashes)
- Steps to Diagnose Problems
- When to Seek Professional Help

11. File Management

- Organizing Files and Folders
- Creating, Renaming, and Deleting Files

- Understanding Different File Types (PDF, DOCX, JPG)

12. Security and Privacy Considerations

- Importance of Strong Passwords
- Managing Privacy Settings on Devices
- Recognizing and Avoiding Scams

13. Connecting Wireless Cameras

- Overview of Wireless Camera Technology
- Setting Up and Configuring Wireless Cameras
- Basic Troubleshooting for Wireless Devices

14. Dealing with Computer and Internet Security

- Implementing Security Best Practices
- Understanding Data Encryption and Secure Connections
- Regular Updates and Backups

Course Delivery

- **Format:** Lectures, Hands-on Practice, Group Activities
- **Duration:** Typically 4-8 weeks, depending on the depth of coverage
- **Assessment:** Practical exercises, quizzes, and a final project

INTERNSHIP (INDUSTRIAL) TRAINING



The Internship (Industrial) Training course provides students with hands-on experience in various facets of the technology and business sectors. This comprehensive program encompasses practical training in computer applications, website programming, graphic design, database programming, software development, mobile app development, computer networking, and digital marketing. Students will engage in real-world projects, collaborate in teams, and produce a final report reflecting their experiences.

COURSE OBJECTIVES

- To offer students practical exposure to different technological and business functions within an industrial setting.
- To enhance technical skills through hands-on training in software applications, programming, and networking.
- To foster teamwork and collaboration through group projects.
- To encourage self-reflection and professional development through the preparation of an internship report.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Understand Internship Dynamics:** Describe the structure and expectations of the internship program, including organizational culture and intern responsibilities.
2. **Utilize Computer Applications:** Demonstrate proficiency in essential software applications, including productivity tools such as Microsoft Office and Google Workspace.
3. **Develop Websites:** Apply HTML, CSS, and JavaScript fundamentals to create responsive web designs using web development frameworks like Bootstrap.
4. **Create Graphic Designs:** Use graphic design software (e.g., Adobe Photoshop, Illustrator) to produce visual content for digital platforms, understanding design principles.
5. **Perform Computer Maintenance:** Identify hardware components, troubleshoot common issues, and implement preventive maintenance practices.
6. **Execute Database Programming:** Write basic SQL queries (SELECT, INSERT, UPDATE, DELETE) and manage databases using MySQL.
7. **Engage in Software Development:** Understand the software development lifecycle (SDLC), programming languages, and basic version control concepts using Git.
8. **Build Mobile Applications:** Navigate the mobile app development process, utilizing platforms like Android Studio or Flutter to create simple applications.
9. **Apply Networking Essentials:** Describe networking concepts, topologies, and protocols, including configuring a wireless camera.
10. **Implement Digital Marketing Strategies:** Discuss strategies in digital marketing, covering social media marketing, SEO, and content marketing basics.
11. **Collaborate on Group Projects:** Collaborate effectively in teams to develop projects, applying learned concepts in a practical scenario and presenting findings.
12. **Reflect on Internship Experience:** Document and reflect on the internship experience, detailing skills learned, challenges faced, and personal development in a final report.

COURSE TOPICS

1. Orientation
2. Computer Applications
3. Website Programming
4. Graphic Designing
5. Computer Repair & Maintenance
6. Database Programming (SQL & MySQL)
7. Software Development
8. Mobile App Development
9. Essentials of Computer Networking
10. Digital Marketing
11. Group Project
12. Internship Report

1. Orientation

- Overview of the internship program
- Introduction to the organization and its culture
- Expectations and responsibilities of interns

2. Computer Applications

- Overview of essential software applications
- Familiarization with productivity tools (e.g., Microsoft Office, Google Workspace)

3. Website Programming

- HTML, CSS, and JavaScript fundamentals
- Responsive web design principles
- Introduction to web development frameworks (e.g., Bootstrap)

4. Graphic Designing

- Introduction to graphic design principles
- Using design software (e.g., Adobe Photoshop, Illustrator)
- Creating visual content for digital platforms

5. Computer Repair & Maintenance

- Basic hardware components and their functions
- Troubleshooting common computer issues
- Preventive maintenance practices

6. Database Programming

- Introduction to databases and SQL
- Basic SQL queries (SELECT, INSERT, UPDATE, DELETE)
- Working with MySQL for database management

7. Software Development

- Overview of software development lifecycle (SDLC)
- Introduction to programming languages (e.g., PHP, Java)
- Basic concepts of version control with Git

8. Mobile App Development

- Overview of mobile app development processes
- Introduction to development platforms (e.g., Android Studio, Flutter)
- Building a simple mobile application

9. Essentials of Computer Networking

- Introduction to networking concepts
- Understanding network topologies and protocols
- Connecting a wireless camera: setup and configuration

10. Digital Marketing

- Overview of digital marketing strategies
- Introduction to social media marketing
- Basics of SEO and content marketing

11. Group Project

- Collaborative project development
- Applying learned concepts to a practical scenario
- Presenting the group project findings

12. Internship Report

- Documenting the internship experience
- Reflecting on skills learned and challenges faced
- Preparing a final report for evaluation



MOBILE APP PROGRAMMING

This course provides a thorough introduction to mobile app programming, focusing on developing Progressive Web Apps (PWAs) and Android applications. Students will learn the full app development lifecycle, from setting up the development environment to designing user interfaces, integrating APIs, and publishing applications. Emphasis will be placed on practical skills, including coding in PHP, HTML, CSS, and JavaScript, as well as working with Android Studio.

COURSE OBJECTIVES

- To introduce the fundamental concepts of mobile app development, including native, hybrid, and web applications.
- To equip students with the skills needed to design, develop, and deploy mobile applications using modern tools and technologies.
- To enhance understanding of user experience principles and best practices in mobile app design.
- To provide hands-on experience through a final project that encompasses the entire app development process.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Understand Mobile App Development:** Explain the different types of mobile applications and the app development lifecycle, including the advantages of Progressive Web Apps (PWAs).

2. **Set Up Development Environments:** Install and configure necessary tools for Android and PHP development, including Android Studio and XAMPP.
3. **Use PHP for PWA Development:** Write PHP code to handle form data and manage user input, utilizing arrays and objects effectively.
4. **Implement Frontend Technologies:** Create structured web pages using HTML5, style them with CSS3, and add interactivity with JavaScript.
5. **Create Service Workers:** Implement service workers to enable offline functionality and caching strategies in PWAs.
6. **Build Application Shells:** Design and build the layout of a mobile app using responsive design principles and dynamic content integration.
7. **Integrate APIs:** Fetch and display data from RESTful APIs using AJAX calls, enhancing app functionality with external data sources.
8. **Implement User Authentication:** Set up secure user registration and login systems, including password recovery mechanisms.
9. **Develop Android Applications:** Create Android projects in Android Studio, understanding key components like Activities and Fragments.
10. **Design User Interfaces:** Utilize XML for layout design and apply Material Design principles to enhance user experience on Android.
11. **Work with Data in Android:** Store and manage data using SharedPreferences and SQLite, as well as fetch data from APIs.
12. **Create and Publish APKs:** Build signed APK files for Android, and understand the app submission process to the Google Play Store.
13. **Enhance App Functionality:** Integrate advanced features such as push notifications, social media sharing, and monetization strategies.
14. **Test and Debug Applications:** Employ various testing and debugging tools to identify and resolve issues in PWAs and mobile apps.
15. **Deploy PWAs:** Prepare and host PWAs for production, ensuring secure connections with SSL.
16. **Complete a Final Project:** Develop a fully functional mobile application or PWA that incorporates the skills learned throughout the course, culminating in a presentation of the project.

COURSE TOPICS

1. Introduction to Mobile App Development
2. Setting Up the Development Environment
3. PHP Basics for PWA Development
4. Frontend Technologies
5. Creating a Service Worker
6. Building the Application Shell
7. API Integration
8. Offline Functionality
9. User Authentication
10. Android App Development Basics
11. User Interface Design for Android
12. Working with Data in Android
13. Creating APKs for Android
14. Publishing the App
15. Enhancing App Functionality
16. Testing and Debugging
17. Deployment of PWA
18. Enhancing the PWA
19. Final Project

1. Introduction to Mobile App Development

- Overview of mobile app types: native, hybrid, and web apps
- Understanding the app development lifecycle
- Key considerations for mobile app design and user experience
- Introduction to Progressive Web Apps (PWAs)
 - Understanding PWAs and their advantages
 - Key features of PWAs (offline capability, responsiveness)
 - Differences between PWAs and native apps

2. Setting Up the Development Environment

- Tools and software for Android development (Android Studio, SDK)
- Installing necessary tools for PHP development (XAMPP, code editor)
- Installing necessary plugins and dependencies
- Overview of version control with Git
- Creating a new PHP project structure

3. PHP Basics for PWA Development

- Introduction to PHP syntax and functions
- Working with arrays and objects
- Handling form data and user input

4. Frontend Technologies

- HTML5: Structure of web pages
- CSS3: Styling techniques for responsive design
- JavaScript: Basics for interactivity and dynamic content

5. Creating a Service Worker

- Understanding service workers and their role in PWAs
- Registering and installing a service worker
- Implementing caching strategies for offline use

6. Building the Application Shell

- Designing the app layout with HTML and CSS
- Using responsive design principles
- Integrating JavaScript for dynamic content updates

7. API Integration

- Understanding RESTful APIs
- Fetching data using AJAX calls
- Displaying API data in the PWA

8. Offline Functionality

- Implementing offline capabilities with service workers
- Managing cached data and fallback content
- Testing offline functionality

9. User Authentication

- Setting up user registration and login systems
- Securing user data and sessions
- Implementing password recovery and user management

10. Android App Development Basics

- Understanding Android architecture
- Creating a new project in Android Studio
- Exploring the project structure and key components (Activities, Fragments)

11. User Interface Design for Android

- Designing layouts using XML
- Using Android UI components (Buttons, TextViews, RecyclerView)
- Implementing Material Design principles

12. Working with Data in Android

- Storing data using SharedPreferences
- Using SQLite for local databases
- Fetching data from APIs using Retrofit or Volley

13. Creating APKs for Android

- Understanding APK format and structure
- Steps to build a signed APK:
 - Configuring build settings in Android Studio
 - Generating a signed APK file
 - Best practices for versioning and naming convention
- Testing the APK on emulators and real devices

14. Publishing the App

- Preparing app assets (icons, screenshots, descriptions)
- Setting up a Google Play Developer account
- Submitting the app to the Google Play Store:
 - Understanding app review processes
 - Managing app updates and user feedback

15. Enhancing App Functionality

- Implementing push notifications
- Integrating social media sharing features
- Adding in-app purchases and monetization strategies

16. Testing and Debugging

- Tools for testing PWAs (Chrome DevTools, Lighthouse)
- Testing strategies for mobile apps (unit testing, UI testing)
- Using Android Debug Bridge (ADB) for troubleshooting
- Debugging common issues in PHP and JavaScript
- Tools for performance monitoring and analytics (Firebase)

17. Deployment of PWA

- Preparing the app for production
- Hosting options for PHP applications
- Setting up a domain and SSL for HTTPS

18. Enhancing the PWA

- Adding push notifications
- Implementing web app manifests for installation
- Improving performance with lazy loading

19. Final Project

- Developing a complete PWA using PHP
- Developing a complete mobile app using either native or hybrid approach
- Incorporating features learned throughout the course
- Presenting the project and gathering feedback

SOFTWARE PROGRAMMING



This course provides a comprehensive overview of software programming, focusing on core concepts, methodologies, and technologies essential for developing robust software applications. Students will explore programming fundamentals, data structures, algorithms, database management, API integration, testing, and security best practices. Hands-on projects and real-world applications will enhance the learning experience, preparing students for a career in software development.

COURSE OBJECTIVES

- To introduce fundamental programming concepts and languages.
- To develop skills in data structures and algorithms for efficient problem-solving.
- To familiarize students with software development methodologies and best practices.
- To equip students with knowledge of databases, APIs, and user interface design.
- To emphasize the importance of testing, debugging, and security in software development.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Understand Programming Concepts:** Explain the key constructs of programming languages, including variables, control structures, and functions, using PHP as a primary language.
2. **Implement Data Structures:** Utilize various data structures (arrays, lists, stacks, queues) and algorithms (searching, sorting) in PHP, understanding their time complexity and practical applications.

3. **Apply Software Development Methodologies:** Describe the software development life cycle (SDLC) and apply Agile methodologies such as Scrum and Kanban in project management.
4. **Work with Databases and SQL:** Connect PHP to a MySQL database, performing CRUD operations and understanding the role of relational databases in software applications.
5. **Integrate APIs and Web Services:** Consume and create RESTful APIs using PHP, understanding data formats like JSON and XML, and implementing authentication methods.
6. **Develop Mobile Applications:** Explore mobile development frameworks (e.g., React Native, Flutter) and build APIs for mobile applications, integrating them with backend PHP services.
7. **Conduct Testing and Debugging:** Implement various testing techniques (unit, integration, functional) and use tools like PHPUnit and Xdebug for effective debugging and test-driven development (TDD).
8. **Utilize Software Design Patterns:** Identify and implement common design patterns (e.g., Singleton, Factory, MVC) in PHP, understanding their benefits in software architecture.
9. **Manage Deployment and CI/CD:** Set up deployment processes and CI/CD pipelines for PHP applications using tools like Docker and Jenkins, ensuring best practices in versioning and monitoring.
10. **Implement Security Best Practices:** Recognize common security vulnerabilities and apply best practices for securing PHP applications, including input validation and HTTPS usage.
11. **Design User Interfaces:** Apply UI/UX design principles to create user-centered designs, utilizing tools like Figma and Adobe XD, and implementing responsive design with PHP.
12. **Optimize Application Performance:** Identify performance bottlenecks and apply optimization techniques in PHP code and database management, using profiling tools to enhance scalability.

COURSE TOPICS

1. Introduction to Programming Concepts
2. Data Structures and Algorithms
3. Software Development Methodologies
4. Databases and SQL
5. APIs and Web Services
6. Mobile Application Development
7. Testing and Debugging Techniques
8. Software Design Patterns
9. Deployment and Continuous Integration/Continuous Deployment (CI/CD)
10. Security Best Practices in Software Development
11. User Interface (UI) and User Experience (UX) Design
12. Performance Optimization Techniques

TOPIC 1: Introduction to Programming Concepts

- Understanding programming languages and environments
- Basic programming constructs (variables, data types, operators)
- Control structures (conditional statements, loops)
- Functions and scope
- Introduction to PHP syntax and structure

TOPIC 2: Data Structures and Algorithms

- Overview of data structures (arrays, lists, stacks, queues)
- Understanding algorithms (searching, sorting)
- Implementing data structures in PHP
- Time complexity and big O notation
- Practical examples of data manipulation using PHP

TOPIC 3: Software Development Methodologies

- Overview of software development life cycle (SDLC)
- Agile methodologies (Scrum, Kanban)
- Waterfall model
- Version control and collaboration (Git)
- Best practices for project management

TOPIC 4: Databases and SQL

- Introduction to databases and relational database management systems (RDBMS)
- Understanding SQL and its importance
- Basic SQL commands (SELECT, INSERT, UPDATE, DELETE)
- Connecting PHP to a MySQL database
- Performing CRUD operations in PHP

TOPIC 5: APIs and Web Services

- Understanding APIs (RESTful and SOAP)
- How to consume APIs in PHP
- Creating a simple RESTful API with PHP
- JSON and XML data formats
- Authentication methods (API keys, OAuth)

TOPIC 6: Mobile Application Development

- Overview of mobile development frameworks (React Native, Flutter)
- Understanding the role of PHP in mobile backend development
- Building APIs for mobile applications

- Best practices for mobile app integration with PHP
- Testing and debugging mobile applications

TOPIC 7: Testing and Debugging Techniques

- Importance of testing in software development
- Types of testing (unit, integration, functional)
- Tools for testing PHP applications (PHPUnit)
- Debugging techniques and tools (Xdebug, error logging)
- Writing test cases and test-driven development (TDD)

TOPIC 8: Software Design Patterns

- Introduction to design patterns and their importance
- Common design patterns (Singleton, Factory, MVC)
- Implementing design patterns in PHP
- Benefits of using design patterns in software architecture
- Case studies of design patterns in real-world applications

1 TOPIC 9: Deployment and Continuous Integration/Continuous Deployment (CI/CD)

- Overview of deployment processes
- Tools for deployment (Docker, Jenkins)
- Setting up a CI/CD pipeline with PHP applications
- Best practices for deployment and versioning
- Monitoring and maintaining deployed applications

TOPIC 10: Security Best Practices in Software Development

- Common security vulnerabilities (SQL injection, XSS, CSRF)
- Best practices for securing PHP applications
- Input validation and sanitization
- Using HTTPS and SSL certificates
- Regular security audits and updates

TOPIC 11: User Interface (UI) and User Experience (UX) Design

- Basics of UI/UX design principles
- Importance of user-centered design
- Tools for UI design (Figma, Adobe XD)
- Implementing responsive design with PHP
- User testing and feedback incorporation

TOPIC 12: Performance Optimization Techniques

- Understanding performance bottlenecks
- Techniques for optimizing PHP code (caching, opcode caching)
- Database optimization strategies
- Using profiling tools to identify performance issues
- Best practices for scalable PHP applications

WEBSITE PROGRAMMING



This course provides a comprehensive introduction to website programming, covering essential technologies and practices for creating modern, responsive websites. Students will learn HTML, CSS, and JavaScript, as well as frameworks like Bootstrap. The course also addresses web hosting, server configuration, Progressive Web Apps (PWAs), search engine optimization (SEO), and user experience (UX) design principles. Through hands-on projects, students will gain practical experience in developing and deploying websites.

COURSE OBJECTIVES

- To introduce the foundational technologies used in website development, including HTML, CSS, and JavaScript.
- To develop skills in responsive design using frameworks like Bootstrap.
- To familiarize students with web hosting and server configuration processes.
- To enhance understanding of modern web applications through PWAs and SEO practices.
- To emphasize the importance of user experience design in web development.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. **Understand HTML:** Explain the purpose of HTML, including its structure, elements, and advanced features such as multimedia and forms.
2. **Utilize CSS:** Apply CSS to style web pages, using various selectors, layout techniques, and advanced features like animations and media queries.

3. **Implement JavaScript:** Demonstrate knowledge of JavaScript basics, including syntax, data types, and DOM manipulation, as well as the use of ES6 features.
4. **Use Bootstrap:** Employ the Bootstrap framework to create responsive layouts and utilize its various components effectively.
5. **Plan and Execute a Website Project:** Define project scope, create wireframes, and develop a fully functional website using HTML, CSS, JavaScript, and Bootstrap.
6. **Test and Debug Websites:** Apply testing techniques and utilize debugging tools to identify and resolve common issues in web applications.
7. **Configure Web Hosting:** Understand different types of web hosting and domain registration, and configure server settings for website deployment.
8. **Deploy Websites:** Execute the process of uploading files to a server, implementing SSL certificates, and optimizing website performance.
9. **Develop Progressive Web Apps:** Understand the concept and benefits of PWAs, implementing service workers for offline capabilities.
10. **Implement SEO Best Practices:** Apply SEO strategies to optimize web content and improve visibility in search engines.
11. **Design for User Experience:** Recognize the principles of user-centered design and apply them to enhance the overall user experience of web applications.

COURSE TOPICS

1. Introduction to HTML
2. Introduction to CSS
3. Introduction to JavaScript & Bootstrap
4. Project on Website Programming
5. Introduction to Website Hosting and Server Configuration
6. Progressive Web Apps (PWAs)
7. Search Engine Optimization (SEO)
8. User Experience (UX) Design Principles

TOPIC 1: Introduction to HTML

1.1 Understanding HTML

- Definition and purpose of HTML
- History of HTML: HTML3 vs. HTML5
- Basic structure of an HTML document

1.2 HTML Elements and Tags

- Common HTML tags (headings, paragraphs, links, images, lists)
- Semantic HTML elements (header, footer, nav, section, article)

1.3 Advanced HTML5 Features

- Multimedia elements (audio, video)
 - HTML5 forms and input types
 - Canvas element for graphics
-

TOPIC 2: Introduction to CSS

2.1 Understanding CSS

- Definition and purpose of CSS
- CSS3 features and improvements over previous versions

2.2 CSS Syntax and Selectors

- Basic syntax (selectors, properties, values)
- Types of selectors (class, ID, attribute, pseudo-classes)

2.3 Layout Techniques

- Box model (margin, border, padding)
- Flexbox and Grid layout
- Responsive design principles

2.4 Advanced CSS3 Features

- Transitions and animations
- Media queries for responsive design
- Custom properties (CSS variables)

TOPIC 3: Introduction to JavaScript & Bootstrap

3.1 Understanding JavaScript

- Definition and purpose of JavaScript
- History and evolution of JavaScript
- Basic syntax and data types

3.2 JavaScript in the Browser

- DOM manipulation and events
- Introduction to ES6 features (let, const, arrow functions)

3.3 Introduction to Bootstrap

- Overview of Bootstrap framework
 - Grid system and responsive design
 - Components (buttons, modals, forms)
-

TOPIC 4: Project on Website Programming

4.1 Project Planning

- Defining project scope and objectives
- Wireframing and creating mockups

4.2 Development Process

- Setting up the development environment
- Building the website using HTML, CSS, and JavaScript
- Implementing Bootstrap for responsive design

4.3 Testing and Debugging

- Techniques for testing web applications
- Common debugging tools and practices

4.4 Deployment

- Preparing the website for launch
- Best practices for optimizing performance

TOPIC 5: Introduction to Website Hosting and Server Configuration

5.1 Understanding Web Hosting

- Types of web hosting (shared, VPS, dedicated, cloud)
- Domain registration and DNS basics

5.2 Server Configuration

- Overview of server types (Apache, Nginx)
- Basic server configuration settings

5.3 Deploying a Website

- Uploading files to the server
- Configuring server settings for a website
- Implementing SSL certificates and security measures

5.4 Performance Optimization

- Caching strategies
- Content Delivery Networks (CDNs)

5.5 Troubleshooting Common Hosting Issues

- Diagnosing server errors
 - Common troubleshooting techniques
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TOPIC 6: Progressive Web Apps (PWAs)

- Understanding PWAs and their benefits
 - Service workers and offline capabilities
-

TOPIC 7: Search Engine Optimization (SEO)

- Basics of SEO for web developers
- Best practices for optimizing web content

TOPIC 8: User Experience (UX) Design Principles

- Basics of UX design
- Importance of user-centered design