A.C.-30.11.2023
Appendix-7

INDEX

KALINDI COLLEGE

SEMESTER – IV

Bachelor of Vocation- Web Designing

DISCIPLINE SPECIFIC CORE COURSE – 10 Full Stack Web Development -1

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Full Stack Web Development -1	4	3	0	1	Class XII Pass	DSC-05

Learning Objectives:

1. To introduce the fundamentals of the Internet, and the principles of web design.
2. To construct basic websites using JQuery and AJAX.

Learning Outcomes:

1. Assimilate and master latest framework like frameworks like js, Node.js, and MongoDB.
2. Build Responsive Web application using Angular Typescript
3. Learn Angular Binding and events with templates
4. Use Mongo DB queries, tools and apply CRUD operations.

SYLLABUS OF DSC-10

Unit 1 Introduction to JQuery (4 weeks)

JQuery Introduction, JQuery Syntax, JQuery Selectors, JQuery Events, JQuery Effects- JQuery Hide/Show, JQuery Fade, JQuery Slide(), JQuery Animate, JQuery Stop(), JQuery Callback, JQuery Chaining, JQuery AJAX- JQuery AJAX Introduction, JQuery Load, JQuery Get/Post, JQuery HTML, JQuery Get, JQuery Set, JQuery Add, JQuery Remove, JQuery CSS Classes, JQuery CSS(), JQuery forms.

Unit 2 Introduction to Angular JS (2 weeks)

Angular Architecture, Building blocks of Angular, Angular CLI and commands, Angular Modules, Understanding files in Angular, Angular forms.

Unit 3 Working of Angular Applications (3 weeks)

Angular App Bootstrapping ,Angular Components, Creating A Component Through Angular CLI , Ways to specify selectors , Template and styles , Installing bootstrap to design application , Data Binding , Types of Data Binding , Component Interaction using @Input and @Output decorator , Angular Animations , Component Life-cycle Hooks , Angular Directives.

Unit 4 Introduction of Mongo DB (3 weeks)

Overview , Design Goals for Mongo DB Server and Database, Mongo DB Tools , How to modularize code by separating routes , Usage of various Mongo DB Tools available with Mongo DB Package , Mongo DB Development Architecture.

Unit 5 Crud Operations (3 weeks)

Mongo DB CRUD Introduction, Mongo DB Datatypes , Analogy between RDBMS & Mongo DB Data Model, Mongo DB Data Model (Embedding & Linking), Challenges for Data Modelling in Mongo DB.

Practical component

A web development project implementing the technologies such as JQuery, JavaScript, Angular JS, Mongo DB.

Essential readings

1. Brad Dayley, Node.js, Mongo DB and Angular Web Development: The definitive guide to using the MEAN stack to build web applications (Developer's Library), 2nd edition, Addison-Wesley, 2018.
2. Cody Lindley, JQuery Cookbook, O'Reilly, 2009.

DISCIPLINE SPECIFIC CORE COURSE – 11 PHP Programming

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
PHP Programming	4	3	0	1	Class XII Pass	NA

Learning Objectives

This module is intended to learn the functionality and utility of PHP along with the usage of syntax, variables and data types available in PHP. This module is also intended to learn the installation and deployment of PHP.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze PHP scripts and determine their behavior.
2. Construct PHP scripts to create dynamic web content.

SYLLABUS OF DSC-11

Unit 1 Introduction to PHP (2 weeks)

PHP introduction, inventions, and versions, important tools and software requirements (like Web Server, Database, Editors etc.), PHP with other technologies, the scope of PHP, Basic Syntax, PHP variables and constants, Types of data in PHP, Expressions, scopes of a variable (local, global), PHP Operators: Arithmetic, Assignment, Relational, Logical operators, Bitwise, ternary Grade A Grade B Grade C Grade and MOD operator, PHP operator Precedence and associativity.

Unit 2 Handling HTML form with PHP (2 weeks)

Capturing Form Data, GET and POST form methods Dealing with multi-value fields Redirecting a form after

submission

Unit 3 PHP conditional events and Loops (2 weeks)

PHP IF Else conditional statements (Nested IF and Else) Switch case, while, For and Do While Loop, Goto, Break, Continue, and exit.

Unit 4 PHP Functions (3 weeks)

Function, Need of Function, declaration and calling of a function, PHP Function with arguments, Default Arguments in Function, Function argument with call by value, call by reference, Scope of Function Global and Local.

Unit 5 String Manipulation and Regular Expression (3 weeks)

Creating and accessing String, Searching & Replacing String, Formatting, Joining and Splitting String, String Related Library functions, Use and advantage of regular expression over inbuilt function, Use of preg_match(), preg_replace(), preg_split() functions in the regular expression.

Unit 6 Array (3 weeks)

Anatomy of an Array, Creating index-based and Associative array, Accessing array Looping with Index-based array, with associative array using each() and foreach(), Some useful Library function.

Practical component

Practical based on PHP programming.

Essential readings

1. Steven Holzner, PHP: The Complete Reference, 1st Edition, McGraw Hill Education, 2007.
2. Timothy Boronczyk, Martin E. Psinas, PHP and MYSQL (Create-Modify-Reuse), Wiley India Private Limited, 2008.
3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, 3rd Edition, O'Reilly, 2014.
4. Luke Welling, Laura Thompson, PHP and MySQL Web Development, 4th Edition, Addison-Wesley, 2008.

DISCIPLINE SPECIFIC CORE COURSE – 12 DBMS using MySQL

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DBMS using MySQL	4	3	0	1	Class XII Pass	NA

Learning Objectives

The course introduces the students to the fundamentals of database management system and its architecture. Emphasis is given on the popular relational database system including data models and data manipulation. Students will learn about the importance of database structure and its designing using conceptual approach using Entity Relationship Model and formal approach using Normalization. The importance of file indexing and controlled execution of transactions will be taught. The course would give students hands-on practice of structured query language in a relational database management system and glimpse of basic database administration commands.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Use database management system software to create and manipulate the database.
2. Create conceptual data models using entity relationship diagrams for modeling real-life situations and designing the database schema.
3. Use the concept of functional dependencies to remove redundancy and update anomalies.
4. Apply normalization theory to get a normalized database scheme.
5. Write queries using relational algebra, a procedural language.
6. Implement relational databases and formulate queries to get solutions for a broad range of data retrieval and data update problems using SQL.

SYLLABUS OF DSC-12

Unit 1 Introduction to Database (2 weeks)

Purpose of database system, Characteristics of database approach, data models, database management system, database system architecture, three-schema architecture, components of DBMS, data independence, and file system approach vs database system approach.

Unit 2 Entity Relationship Modeling (2 weeks)

Conceptual data modeling - motivation, entities, entity types, attributes, relationships, relationship types, constraints on relationship, Entity Relationship diagram notation.

Unit 3 Relational Data Model (3 weeks)

Update anomalies, Relational Data Model - Concept of relations, schema-instance distinction, keys, relational integrity constraints, referential integrity and foreign keys, relational algebra operators and queries.

Unit 4 Structured Query Language (SQL) (3 weeks)

Querying in SQL, DDL to create database and tables, table constraints, update database-update behaviors, DML, aggregation functions group by and having clauses, retrieve data from the database, generate and query views. Access and manipulate databases using ODBC. Basic Database administration SQL commands.

Unit 5 Database Design (3 weeks)

Mapping an Entity Relationship model to relational database, functional dependencies and Normal forms, 1NF, 2NF, 3NF and BCNF decompositions and desirable properties of them.

Unit 6 File indexing and Transaction Processing (2 weeks)

Data Storage and Indexes- Need of file indexes, file organizations, index structures, single- and multi-level indexing, concurrent execution of transactions, ACID properties, need of data recovery and log file.

Practical component

Practical based on MySQL.

Essential Readings:

1. Elmasri Ramez, Shamkant B. Navathe, Fundamentals of Database Systems, 7th Edition, Pearson Education, 2015.
2. Jesper Wisborg Krogh, MySQL Connector/Python Revealed: SQL and NoSQL Data Storage Using MySQL for Python Programmers, Apress, 2018.
3. Joel Murach, Murach's MySQL, 3rd edition, Pearson, 2019.

Suggested Readings:

1. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, 3rd Edition, McGraw-Hill, 2014.
2. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, 7th Edition, McGraw Hill, 2021.
3. Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation, and Management, 6th edition, Pearson, 2021.

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 2A DATA PRIVACY

Course title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Data Privacy	4	3	0	1	Class XII Pass	NA

Learning Objectives

The paper aims to introduce privacy, social behavior, policy, or professional practices and security issues in social networking.

Learning Outcomes

After completion of the course, students should be able to:

1. Identify and analyze security problems and risks faced in computer systems and networks.
2. Explain how standard security mechanisms work.
3. To increase trust in online environment.
4. To introduce security management in cloud.
5. Knowledge about Personal Data Protection bill.

SYLLABUS OF DSE 2A

Unit 1 Introduction to Data Privacy (3 weeks)

Data Life Cycle, Privacy concern in clouds, Protecting privacy, Privacy risk management, legal and Regulatory implications (IT Law), International law and Regulations.

Unit 2 Privacy in Network (4 weeks)

Privacy concerns in networked technology, contextual influences on privacy attitudes and behaviors, Anonymity in the networked world, ethical problems posed by emerging social media technologies, basis of tracking social media.

Unit 3 Security Management in Cloud (4 weeks)

Security Management Standards, Security Management in cloud, Availability Management, SAAS Availability Management, PAAS Availability Management, IAAS Availability Management, Access Control, Security Vulnerability, Patch and Configuration management, Geo Tagging.

Unit 4 Personal Data Protection bill (4 weeks)

3(29) Personal Data, 3(35) Sensitive Personal Data, Sections - 12, 13, 14, 16, 17, 69, 75, Offences (90-96).

Practical component

Practical exercises based on the syllabus.

Essential Readings

1. Tim Mather, Subra Kumaraswamy, Shahed Latif, Cloud Security and Privacy: An enterprise perspective on risks and compliance, O'Reilly, 2009.

2. www.meity.gov.in

DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE 2B Ethical Hacking

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ethical Hacking	4	3	0	1	Class XII Pass	NA

Learning Objectives

This course introduces the concepts of Ethical Hacking and gives the learner the opportunity to learn about different tools and techniques in Ethical hacking and security, to identify and analyze the stages an ethical hacker requires to take in order to compromise a target system as well as will apply preventive, corrective and protective measures to safeguard the system.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Candidate would be able to identify tools and techniques to carry out a penetration testing
2. Critically evaluate security techniques used to protect system and user data.
3. Help to demonstrate systematic understanding of the concepts of security at the level of policy and strategy in a computer system.

SYLLABUS OF DSE-2B

Unit 1 Introduction (2 week)

Ethical Hacking Overview - Role of Security and Penetration Testers .- Penetration-Testing Methodologies- Laws of the Land - Overview of TCP/IP- The Application Layer - The Transport Layer - The Internet Layer - IP Addressing .- Network and Computer Attacks - Malware - Protecting Against Malware Attacks.- Intruder Attacks - Addressing Physical Security

Unit 2 Foot Printing, Reconnaissance and Scanning Networks (3 weeks)

Footprinting Concepts - Footprinting through Search Engines, Web Services, Social Networking Sites,

Website, Email - Competitive Intelligence - Footprinting through Social Engineering - Footprinting Tools - Network Scanning Concepts - Port-Scanning Tools - Scanning Techniques - Scanning Beyond IDS and Firewall

Unit 3 Enumeration and vulnerability analysis (3 weeks)

Enumeration Concepts - NetBIOS Enumeration – SNMP, LDAP, NTP, SMTP and DNS Enumeration - Vulnerability Assessment Concepts - Desktop and Server OS Vulnerabilities - Windows OS Vulnerabilities

Unit 4 System hacking (4 weeks)

Hacking Web Servers - Web Application Components- Vulnerabilities - Tools for Web Attackers and Security Testers Hacking Wireless Networks - Components of a Wireless Network – Wardriving- Wireless Hacking

Unit 5 Network protection systems (3 weeks)

Access Control Lists. - Cisco Adaptive Security Appliance Firewall - Configuration and Risk Analysis Tools for Firewalls and Routers - Intrusion Detection and Prevention Systems – Network-Based and Host-Based IDSs and IPSs - Web Filtering - Security Incident Response Teams – Honeypots.

Practical component

Practical exercises based on the syllabus.

Essential Readings

1. Michael T. Simpson, Kent Backman, James E. Corley, Hands-On Ethical Hacking and Network Defense, Course Technology, Delmar Cengage Learning, 2010.
2. Patrick Engebretson, The Basics of Hacking and Penetration Testing, 2nd Edition, Syngress, Elsevier, 2013.
3. Dafydd Stuttard, Marcus Pinto, The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws, 2nd Edition, Wiley, 2011.

Suggested Readings

1. Justin Seitz, Black Hat Python: Python Programming for Hackers and Pentesters, 2014.