

ANNEXURE – I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1052 : DIPLOMA IN INFORMATION TECHNOLOGY SYLLABUS

N-SCHEME

(To be implemented from the year 2020-21 onwards)

CURRICULUM OUTLINE

III SEMESTER

| COL NO. | SUBJECT CODE | SUBJECT | HOURS PER WEEK | | |
|---------|--------------|--|----------------|-----------|-------|
| | | | THEORY | PRACTICAL | TOTAL |
| 1 | 4052310 | Basics of Electrical & Electronics Engineering | 5 | - | 5 |
| 2 | 4046320 | Operating System and Computer Architecture | 5 | - | 5 |
| 3 | 4052330 | C programming and Data structures | 6 | | 6 |
| 4 | 4052340 | Electrical and Electronics Engineering Practical | - | 4 | 4 |
| 5 | 4052350 | Linux Practical | | 4 | 4 |
| 6 | 4052360 | C programming and Data Structures Practical | - | 4 | 4 |
| 7 | 4052370 | E-Publishing Practical | - | 4 | 4 |
| | | | 16 | 16 | 32 |
| | | Physical Education | | | 2 |
| | | Library | | | 1 |
| | Total | | | | 35 |

IV SEMESTER

| COL NO. | SUBJECT CODE | SUBJECT | HOURS PER WEEK | | |
|---------|--------------|---------------------------------------|----------------|-----------|-------|
| | | | THEORY | PRACTICAL | TOTAL |
| | 4046410 | Computer Networks and Cyber Security | 5 | - | 4 |
| 2 | 4052420 | Web Design and Programming | 5 | - | 5 |
| 3 | 4052430 | Object Oriented Programming with Java | 5 | - | 5 |
| 4 | 4052440 | RDBMS | 5 | - | 5 |
| 5 | 4052450 | Web Design and Programming Practical | - | 4 | 4 |
| 6 | 4052460 | Java Programming Practical | - | 4 | 5 |
| 7 | 4052470 | RDBMS Practical | - | 4 | 4 |
| | | | 20 | 12 | 32 |
| | | Physical Education | - | | 2 |
| | | Library | - | | 1 |
| | TOTAL | | 20 | 12 | 35 |

ANNEXURE – II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1046 : DIPLOMA IN INFORMATION TECHNOLOGY SYLLABUS

N-SCHEME

(To be implemented from the year 2020-21 onwards)

SCHEME OF EXAMINATION

III SEMESTER

| Col No | CODE | SUBJECT | Examination Marks | | | Minimum for Pass | Duration |
|--------|---------|--|-------------------|------------|-------|------------------|----------|
| | | | Internal | External * | Total | | |
| 1 | 4052310 | Basics of Electrical and Electronics Engineering | 25 | 100 | 100 | 40 | 3 |
| 2 | 4046320 | Operating System and Computer Architecture | 25 | 100 | 100 | 40 | 3 |
| 3 | 4052330 | C Programming and Data structures | 25 | 100 | 100 | 40 | 3 |
| 4 | 4052340 | Electrical and Electronics Engineering Practical | 25 | 100 | 100 | 50 | 3 |
| 5 | 4052350 | Linux Practical | 25 | 100 | 100 | 50 | 3 |
| 6 | 4052360 | C Programming and Data Structures Practical | 25 | 100 | 100 | 50 | 3 |
| 7 | 4052370 | E Publishing Practical | 25 | 100 | 100 | 50 | 3 |

IV SEMESTER

| Col No | CODE | SUBJECT | Examination Marks | | | Minimum for Pass | Duration |
|--------|---------|---------------------------------------|-------------------|------------|-------|------------------|----------|
| | | | Internal | External * | Total | | |
| 1 | 4046410 | Computer Networks and Cyber Security | 25 | 100 | 100 | 40 | 3 |
| 2 | 4052420 | Web design and Programming | 25 | 100 | 100 | 40 | 3 |
| 3 | 4052430 | Object Oriented Programming with Java | 25 | 100 | 100 | 40 | 3 |
| 4 | 4052440 | RDBMS | 25 | 100 | 100 | 40 | 3 |
| 5 | 4052450 | Web design and Programming Practical | 25 | 100 | 100 | 50 | 3 |
| 6 | 4052460 | Java Programming Practical | 25 | 100 | 100 | 50 | 3 |
| 7 | 4052470 | RDBMS Practical | 25 | 100 | 100 | 50 | 3 |

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 Diploma in Information Technology
 Subject Code : 4046410
 Semester : IV
 Subject Title : COMPUTER NETWORKS AND CYBER SECURITY

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

| Subject | Instructions | | Examination | | | |
|--------------------------------------|--------------|------------------|---------------------|--------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | Duration |
| | | | Internal Assessment | Board Examinations | Total | |
| COMPUTER NETWORKS AND CYBER SECURITY | 5 Hrs | 80 Hrs | 25 | 100* | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

Topics and Allocation of Hours

| UNIT | Topic | Hrs. |
|-------------------|--|-----------|
| I | DATA COMMUNICATIONS | 15 |
| II | OSI MODEL AND LAN PROTOCOLS | 16 |
| III | TCP/IP PROTOCOLS | 15 |
| IV | NETWORK SECURITY | 13 |
| V | NETWORK SECURITY MECHANISMS AND CYBER SECURITY | 14 |
| Test & Model Exam | | 7 |
| Total | | 80 |

RATIONALE:

The course aims to groom the students to gain concepts, knowledge and skills required to work on Computer Networking and Security industry. Course curriculum has

been designed to give overview and use cases of Data Communication, Layered Networks, Internetworking technology/protocols and Computer Security is covered and this will help to prepare the students to keep pace with computer networking and security industry trends.

OBJECTIVES:

- Understand the concept of data communication.
- Discuss the advantages and disadvantages of different network topologies.
- Know different network classification based on different category.
- Study about different networking devices and their practical usages.
- Understand the different layers of OSI and their functions.
- Compare different LAN protocols.
- Understanding of Synchronization in networks
- Study of different WAN networks and protocols
- Study of Broadband Next Gen (BNG)
- Identify the protocols used in TCP /IP and compare with OSI model.
- Know the IP addressing and TCP/ IP protocols briefly.
- QoS and Traffic Engineering in networks
- Overview of Operations, Administration and Maintenance (OAM) in networks
- Understand the basic concepts of network security.
- Identify the attacks and threats.
- Understand the basic concepts of RAID and digital Signatures.
- Study about Cryptography and different Cryptography Algorithms.
- Discuss about Network Security Applications.
- Know the applications of Network Security.
- Discuss about VPN and Firewalls.
- Identify the Wireless Security Issues.
- Network security mechanisms and cyber security

DETAILED SYLLABUS

Contents: Theory

| Unit | Name of the Topics | Hours |
|------|---|--|
| I | <p>DATA COMMUNICATIONS</p> <p>1.1 Data Communication: Components of a data communication – Data flow: Simplex - Half duplex – Full duplex; Networks – Network criteria – Types of Connections: Point to point – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages and Disadvantages of each topology.</p> <p>1.2 Types of Networks: Need for computer Networks - LAN – MAN – WAN – CAN – HAN – Internet – Intranet – Extranet , Client-Server, Peer to Peer, Mobile Networks, Data Centre Networks, Service Provider Networks</p> <p>1.3 Transmission Media: Characteristics of Transmission Media - Classification of transmission media - Guided – Twisted pair – Coaxial – Fiber optics – Unguided – Radio waves – Infrared – Low Orbit satellite (LOS) – VSAT – Cabling and Standards</p> <p>1.4 Network devices: Features and Concepts of Switches – Routers (Wired and Wireless) – Gateways.</p> <p>1.5 Synchronization in Networks: Concepts of Frequency and Time synchronization in Computer networks</p> | <p>2</p> <p>5</p> <p>3</p> <p>3</p> <p>2</p> |
| II | <p>OSI MODEL and LAN PROTOCOLS</p> <p>2.1 Network Models: Protocol definition - Standards - OSI Model – Layered architecture– Functions of all layers.</p> <p>2.2 802.X Protocols: Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) – Token ring (802.5) – Ethernet – Types of Ethernet (Fast Ethernet, gigabit Ethernet, High speed Ethernet 10GE to 800GE) –Comparison between 802.3, 802.4 and 802.5 – Overview of Carrier Ethernet and use cases</p> <p>2.3 WAN Networks: Different layers in Service Provider Networks – Protocols Involved – High level design of Data Centre Networks</p> | <p>3</p> <p>4</p> <p>2</p> |

| | | |
|-----|---|--|
| | <p>2.4. Understanding Wireless Network protocols- 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac</p> <p>2.5 Switching: Definition – Circuit switching – Packet switching – Message switching – Optical Switching OTN– Multicasting</p> <p>2.6 BNG: BNG - Concepts – Services – Broadband NextGen</p> | 3 2 2 |
| III | <p>TCP/IP SUIT and PROTOCOLS</p> <p>3.1 Overview of TCP / IP: OSI & TCP/IP – Transport Layer Protocol– Connection Oriented and Connectionless Services – Sockets - TCP & UDP.</p> <p>3.2 Network Layers Protocol: IP – Interior Gateway Protocols (IGMP, ICMP, ARP, RARP, IGP, BGP Concept only).</p> <p>3.3 IP Addressing: Dotted Decimal Notation –Subnetting &Supernetting – VLSM Technique- IPv6 (concepts only)</p> <p>3.4 Application Layer Protocols: FTP– Telnet – SMTP– HTTP – DNS – POP</p> <p>3.5 QoS and Traffic Engineering: Overview of QoS and Traffic Engineering techniques and protocols</p> <p>3.6 OAM: Concepts of OAM in networks Protocols – Fault detection and isolation</p> | 3 2 3 2 3 2 |
| IV | <p>NETWORK SECURITY</p> <p>4.1 Introduction to Network security: Definition – Need for security – Principles of Security – Attacks – Types of Attacks – Criminal attacks – Legal Attacks – Passive and Active attacks – Software Supply Chain attacks - Security Services – Security Mechanisms .</p> <p>4.2 Cryptography: Definition – Symmetric Encryption principles – Symmetric Block Encryption Algorithms – DES, AES – Stream ciphers – RC4 – Digest function – Public key Cryptography Principles– RSA- Diffe -Hellman algorithm– Digital Signature (Definition only)</p> | 3 3 |

Text Book:

1. "Behrouz A.Forouzen", "Data Communication and Networking", TataMcGraw-Hill,New Delhi, Fifth Edition.
2. "William Stallings", "Network Security Essentials", Pearson Publications, Fifth Edition.
3. "William Stallings", "Cryptography and Network Security", Pearson Publications, Sixth Edition.

Reference Books:

1. "Achyut.S.Godbole", "Computer Communication and Networks", TataMcGraw-Hill,New Delhi.
2. "Andrew S. Tanenbanum", "Computer Networks", Pearson Publications, Fifth Edition.
3. "Behrouz A.Forouzen", "Cryptography and Network Security", TataMcGraw-Hill,New Delhi, Third Edition.
4. " Dr. Jeetendra Pande", Introduction to Cyber Security, Uttarakhand Open University,2017

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN INFORMATION TECHNOLOGY

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021 onwards
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4052420 – WEB DESIGN AND PROGRAMMING

CURRICULUM DEVELOPMENT CENTRE

**STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
 DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS**

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 Diploma in Information Technology

Subject Code : 4052420

Semester : IV

Subject Title : Web Design and Programming

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

| Subject | Instructions | | Examination | | | Duration |
|----------------------------|--------------|------------------|---------------------|--------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | |
| | | | Internal Assessment | Board Examinations | Total | |
| WEB DESIGN AND PROGRAMMING | 5 Hrs | 80 Hrs | 25 | 100* | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

Topics and Allocation of Hours

| UNIT | Topic | Hrs. |
|-------------------|----------------------------------|-----------|
| I | Internet, HTML and Advanced HTML | 15 |
| II | Frames, Forms and CSS | 14 |
| III | JavaScript | 15 |
| IV | PHP | 15 |
| V | PHP Programming and MySQL | 14 |
| Test & Model Exam | | 7 |
| Total | | 80 |

RATIONALE:

The main objective of the of this subject is to introduce the students to the building blocks of Internet and Web Design & Programming using HTML, CSS, Java Script, PHP and MySQL. The subject will impart knowledge to design web pages, dynamic and interactive web sites with client-side and server-side scripting. After completion the students will be able to independently design and develop web sites.

OBJECTIVES:

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

- To acquire knowledge on Internet and basics of networking concepts.
- To acquire basic knowledge on web development.
- Develop simple components in web pages using CSS.
- To acquire knowledge for validations and event handlers using JavaScript.
- To provide the basic knowledge about PHP and web services.
- To impart PHP scripting ideas and importance in web development.
- Write PHP Programs with MySQL database.

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Contents: Theory

| Unit | Name of the Topics | Hours |
|------|---|-------|
| I | INTERNET, HTML AND ADVANCED HTML | |
| | <p>1.1 Internet:</p> <p>History of the Internet - Basics of Networking Concepts – WAN, LAN, TCP/IP, UDP, FTP, Telnet, SMTP, Ports - World Wide Web – HTTP, SMTP, POP3, MIME, Understanding roles of Web Browsers – Concepts of Web Servers.</p> | 5 |
| | <p>1.2 HTML</p> <p>Introduction - Basic Tags of HTML - HTML Tag - TITLE Tag – BODY Tag - Formatting of Text: Headers - Formatting Tags: BOLD, ITALICS, UNDERLINE, PARAGRAPH, TT, STRIKETHROUGH, EM, BR and HR tags - PRE Tag - FONT Tag – Special Characters - Working with Images - META Tag.</p> | 5 |

| | | |
|-----|--|------------------------------|
| | <p>1.3 Advanced HTML</p> <p>Difference between HTML & HTML5 - New elements in HTML5 - Links - Anchor tag – Lists - Unordered Lists - Ordered Lists – Definition Lists; Tables - TABLE, TR and TD Tags - Colspan and Rowspan.</p> | 5 |
| II | <p>FRAMES, FORMS AND CSS</p> <p>2.1 Frames</p> <p>Frameset – FRAME Tag – Frame inside other frames – NOFRAMES Tag.</p> <p>2.2 Forms</p> <p>FORM and INPUT Tag – Textbox - Radio Button – Checkbox – SELECT Tag and Pull Down Lists: Hidden - Submit and Reset; Some Special Tags: COLGROUP - THREAD, TBODY, TFOOT - _blank, _self, _parent, _top – IFRAME – LABEL - Attribute for <SELECT> - TEXTAREA..</p> <p>2.3 CSS</p> <p>Introduction – Features – Style Sheet basics - Working with CSS files – Syntax - Types of Style Sheets - Inline Styles - Embedded Styles - External or Linked Styles - What is CSS3? Animation – Borders – Backgrounds – Fonts – Multiple columns – Text effects.</p> <p>2.4 Formatting Text and Fonts</p> <p>Font Families Font Size Kerning, Leading and Indenting - Formatting Colors and Backgrounds: The Color Attribute - The Background Attribute - Background Colors and Images. Exploring CSS Class and ID Attributes: Defining the CSS Class Attribute – Defining the CSS ID Attribute - Dynamic effects with CSS - Lists- Tables – Forms - Simple Examples using above properties.</p> | 2 3 4 5 |
| III | <p>JAVASCRIPT</p> <p>3.1 JavaScript Basics</p> <p>Need of scripting languages – Variables and Data Types: Declaring Variables – Life span of variables - Data Types - Operators: Assignment, comparison, computational and logical operators - Control Structures: Conditional Statements – Loop Statements: for, while, for in, break and continue statements.</p> | 5 |

| | | |
|----|--|---------------------|
| | <p>3.2 Object-Based Programming and Message boxes</p> <p>Functions - Executing Deferred Scripts - objects: Document object Model, Predefined objects, Array object, History object, Location object - Dialog Boxes - Alert Boxes - Confirm Boxes - Prompt Boxes.</p> <p>3.3 JavaScript with HTML</p> <p>Events - Event Handlers: onLoad and onUnload – onFocus and onBlur – onError - Forms: Forms Array – Form element properties - Introduction to jQuery – Features of jQuery - jQuery example.</p> | 5 |
| IV | <p>PHP</p> <p>4.1 Introduction</p> <p>A Brief Introduction to Apache, MySQL, PHP and Open Source - Server-Side Web Scripting.</p> | 4 |
| | <p>4.2 PHP</p> <p>PHP Structure and Syntax - Integrating HTML with PHP - Syntax and Variables - Constants and Variables - Passing Variables between Pages – if Statements - if and else – switch case - for loop – for each loop.</p> | 5 |
| | <p>4.3 Includes</p> <p>Includes and Functions for Efficient Code - Strings – Arrays and Array Functions - Sessions and Cookies – Sample Programs - Alternates to Incrementing/Decrementing Values..</p> | 6 |
| V | <p>PHP PRGRAMMING AND MYSQL</p> <p>5.1 PHP with MYSQL</p> <p>MySQL Syntax and Commands - Connecting to the MySQL Server – Data types - Functions - Querying the Database - SELECT, Logical Operators – MySQL Programs.</p> <p>5.2 Form Elements</p> <p>Processing the Form - FORM Element - Tables to Display Data – Edit, Update and Delete data.</p> <p>5.3 Hands on Experiments</p> <p>Creating a Simple Shopping - Cart Script – Mini Project.</p> | 3 3 8 |

Reference Books

1. "Douglas E. Comer" "The Internet Book", Prentice Hall.
2. "Terry Felke-Morris" "Web Development and Design Foundations with HTML5", Pearson.
3. "Thomas A. Powell, Fritz Schneider" "HTML & CSS: The Complete Reference", Tata McGraw-Hill.
4. "Thomas Powell, Fritz Schneider" "Java Script: The Complete Reference", Tata McGraw-Hill.
5. "Timothy Boronczyk, Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, Jeremy Stolz, Michael K. Glass" "Beginning PHP6, Apache, MySQL, Web Development", Wrox Publications.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN INFORMATION TECHNOLOGY

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021 onwards
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**4052430 – OBJECT ORIENTED PROGRAMMING
WITH JAVA**

CURRICULUM DEVELOPMENT CENTRE

**STATE BOARD OF TECHNICAL EDUCATION & TRAINING,
 TAMILNADU DIPLOMA IN ENGINEERING / TECHNOLOGY**

SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 Diploma in Information Technology

Subject Code : 4052430

Semester : IV

Subject Title : Object Oriented Programming with Java

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16
 weeks

| Subject | Instructions | | Examination | | | Duration |
|---------------------------------------|--------------|------------------|---------------------|--------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | |
| | | | Internal Assessment | Board Examinations | Total | |
| Object Oriented Programming with Java | 5 | 80 | 25 | 100* | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

Topics and Allocation of Hours

| UNIT | Topic | Hrs. |
|-------------------|---|-----------|
| I | Fundamentals of OOPs & Java | 15 |
| II | Control Structures, Arrays, Vectors and Strings | 13 |
| III | Classes, Interfaces and Packages | 15 |
| IV | Exception Handling, Multithreading and Files | 15 |
| V | Applets, Graphics Programming and AWT Controls | 15 |
| Test & Model Exam | | 7 |
| Total | | 80 |

RATIONALE:

This course explains the fundamental ideas behind the object oriented approach to programming. Knowledge of java helps to create the latest innovations in programming. Like the successful computer languages that came before, java is the blend of the best elements of its rich heritage combined with the innovative concepts required by its unique environment. This subject is designed to give you exposure to basic concepts of object oriented technology. This subject will help in learning to write programs in java.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to

- Understand the basic concepts and applications of Object Oriented Programming.
- Know the history & features Java.
- Use of control structures in Java Program.
- Use of Arrays and Vectors in Java Program.
- Demonstrate the use of string and String Buffers.
- Define Class with the attributes and methods.
- Know the types of inheritances.
- Define and Implement Interfaces.
- Create and access packages.
- Handle the errors using exceptions.
- Creating own exceptions
- Understand the concepts of multithreading.
- Develop multithreaded programs in Java.
- Develop File programs
- Develop simple Applets.
- Use of Graphics, Color & Font class
- List the types of AWT Components and types of event listeners.

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| | |
|---|---|
| Drawing Bar charts. | |
| 5.3 AWT Components and Event Handlers Abstract window tool kit – AWT Controls – Labels – Text Field – Buttons - Checkboxes – Choice – Scrollbars – Event handling: Events, Event sources, Event Listeners, Input Events – Layout Managers – Menus. | 5 |

Reference Books

1. “E. Balagurusamy “, “Programming with Java”, Tata Mc-Graw Hill, New Delhi.
2. “Herbert schildt “, “Java - The complete reference”, Tata Mc graw Hill, New Delhi.
3. “Java 2,J2SE1.4 Complete”, BPB Publications.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN INFORMATION TECHNOLOGY

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021 onwards
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4052440 – RELATIONAL DATABASE MANAGEMENT SYSTEMS

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 Diploma in Information Technology

Subject Code : 4052440

Semester : IV

Subject Title : RELATIONAL DATABASE MANAGEMENT SYSTEMS

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

| Subject | Instructions | | Examination | | | |
|--|--------------|------------------|---------------------|--------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | Duration |
| | | | Internal Assessment | Board Examinations | Total | |
| RELATIONAL DATABASE MANAGEMENT SYSTEMS | 5 Hrs | 80 Hrs | 25 | 100* | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

Topics and Allocation of Hours

| UNIT | Topic | Hrs. |
|-------------------|--|-----------|
| I | Concepts of Databases and Data modeling | 15 |
| II | Relational Data model & MySQL Administration | 15 |
| III | Interactive MySQL | 15 |
| IV | MySQL Performance Tuning | 14 |
| V | Stored Program Concepts & Development | 14 |
| Test & Model Exam | | 7 |
| Total | | 80 |

RATIONALE:

The Database Management system is a collection of programs that enables to store, modify and extract information from a database. The primary resource that fuels knowledge power is the database. Organizations are employing mechanisms to effectively manage and utilize the data stored in the databases. Relational Database Management System has been developed to harness the information stored in the database.

The major objectives of this subject are to provide a strong formal foundation in Database Concepts, technology and practice to the students to enhance them into well informed application developers. After learning this subject, the students will be able to understand the designing of RDBMS and can use any RDBMS package as a backend for database applications.

OBJECTIVES:

On learning of this subject, the students must be able to

- Describe data, database, database management systems and database models.
- To make the students to understand the concept of relational model and constraints.
- To make the students to understand the concept of Client/Server technology, Data warehousing, Data mining and Big Data.
- State CODD's rules.
- Understand Normalization and explain different types of normal form.
- To know DDL, DML, DCL and all related commands.
- Write logical and conditional statement for database query.
- Works with Procedures and functions.
- Create and use Cursors and Triggers.

DETAILED SYLLABUS

Contents: Theory

| Unit | Name of the Topics | Hours |
|-----------|---|-------------------------------------|
| I | <p>CONCEPTS OF DATABASES AND DATA MODELING</p> <p>1.1 Basic Concepts: Data, Databases, Database Management System – Components of Database – Data Dictionary – Architecture: Overall Architecture of DBMS - Three level architecture.</p> <p>1.2 Data Models: Types of Database models: Hierarchical Database Model, Network Database Model and Relational Database Model. E-R model: Entities - Attributes – Relationships – E-R diagram – Samples.</p> <p>1.3 Database Administrator: Server / Client and distributed concept – DBA tasks – DBA Tools/Utilities – Database Maintenance – Backup & Recovery.</p> <p>1.4 Advanced Concepts: Introduction to Data warehousing and Data mining – Applications – Data marts. Big Data: Definition – Characteristics – Various Technologies used – Applications – Overview of NoSQL: Difference between RDBMS and NoSQL – Tools used in Big Data, Scalability, and Understanding storage architecture.</p> | <p>4</p> <p>3</p> <p>3</p> <p>5</p> |
| II | <p>RELATIONAL DATA MODEL & MYSQL ADMINISTRATION</p> <p>2.1 Relational data model: CODD's rules – components of DBMS – Table Structure – Records, rows, tuples, attributes. Keys: Primary key, foreign key, composite key. Meta data – Data Dictionary – Data Integrity – Data constraints and validation – Types of constraints – Difference between SQL and MySQL.</p> <p>2.2 Normalization: Benefits – Normal forms: 1st Normal form, 2nd Normal form, 3rd Normal form.</p> | <p>5</p> <p>3</p> |

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| | <p>2.3 MySQL Installation: Install, Configure and test the MySQL server on Microsoft Windows.</p> <p>2.4 Working with MySQL Admin: Creating (CREATE cmd), Selecting (USE cmd) and Describing database (DESC cmd) – SHOW cmd – backing up databases.</p> | 3 4 |
| III | <p>INTERACTIVE MYSQL</p> <p>3.1 Introduction to MySQL: MySQL data types - Data Definition Commands – Data Manipulation Commands – Data retrieval commands.</p> <p>3.2 MySQL Operators and Expressions: Types of Operators – Arithmetic, Comparison and logical operators – Pattern matching – Import and Export of data.</p> <p>3.3 Built-in Functions: Single row functions – Aggregate functions – Conversion functions.</p> <p>3.4 Querying the table: Selecting rows using Where, Order by, group by & Having clauses. Sub-queries – correlated sub-queries.</p> <p>3.5 Flow control: IF(), IF NULL(), CASE, LOOP, LEAVE, ITERATE, REPEAT, WHILE</p> | 4 2 3 3 3 |
| IV | <p>MYSQL PERFORMANCE TUNING</p> <p>4.1 Indexes and sequences: Index types, Creating of an Index: Simple and Composite Index, Dropping Index. Sequences: creating, altering and dropping sequences.</p> <p>4.2 Views: Introduction – Advantages of views – Creating, Updating and Deleting views.</p> <p>4.3 Joins & Unions: Joins – definition - Types of Joins: natural join, inner join, self join, outer join. Unions: Types: Union, Union All, Union Distinct – order by and Limit handling.</p> <p>4.4 User and Transaction management: creating, deleting, renaming users grant & revoke commands –</p> | 3 3 4 4 |

| | | |
|----------|--|---|
| | Transaction command: commit, rollback and save points. | |
| V | STORED PROGRAM CONCEPTS & DEVELOPMENT | 3 |
| | 5.1 MySQL Procedures & Functions: Creating – Executing and Deleting stored procedures – Creating – Executing and Deleting stored functions – Advantages. | 3 |
| | 5.2 MySQL Trigger & Cursor: Use of Trigger – Creating Trigger – Types of Triggers – Cursor: Creation and Deletion | 3 |
| | 5.3 MySQL and Web: Need for own MySQL programs – MySQL Application Programming Interfaces. | 5 |
| | 5.4 MySQL with PHP: Database connections – Managing Database connections – Performing Queries – Closing Connections. | |

Reference Books:

www.binils.com

1. “Abraham Silberschatz, Henry F.Forth, S.Sudarshan”, “Database System Concepts”, Mc Graw Hill Education. Seventh Edition.
2. “Joel Murach”, “Murach’s MySQL”, Mike Murach & Associates, Inc. 3rd Edition.
3. “Vikram Vaswami”, “The Complete Reference MySQL”.
4. “Paul DuBois”, “MySQL Developers library”, Addison Wesley (4th Edition).



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN INFORMATION TECHNOLOGY

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021 onwards
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**4052450 – WEB DESIGN AND PROGRAMMING
PRACTICAL**

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 Diploma in Information Technology
 Subject Code : 4052450
 Semester : IV
 Subject Title : Web Design and Programming Practical

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

| Subject | Instructions | | Examination | | | Duration |
|--------------------------------------|--------------|------------------|---------------------|--------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | |
| | | | Internal Assessment | Board Examinations | Total | |
| WEB DESIGN AND PROGRAMMING PRACTICAL | 4 | 64 | 25 | 75 | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

RATIONALE:

The main objective of the of this practical subject is to introduce the students to build a complete site, with the writing of a single web page in Web Design & Programming Practical using HTML, CSS, Java Script, PHP and MySQL. The subject will impart knowledge to design web pages, dynamic and interactive web sites with client-side and server-side scripting. After completion the students will be able to independently design and develop web sites and web applications.

OBJECTIVES:

By introducing the Web design and Programming Practical, it is intended to:

- Develop to build a complete website using HTML.
- Create web pages using Advanced HTML and CSS.
- Practice to include JavaScript for form validations.
- Develop and run sample programs using PHP script.
- Develop a simple web application using server side PHP script and MySQL.

DETAILED SYLLABUS

Contents: Practical

| PART A | |
|---------------|---|
| 1. | Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading, a horizontal rule, three links and your photo. Also, write three HTML documents for the links. Include facilities for forward, backward and HOME. |
| 2. | Design a HTML page about computer languages. List the language. Each Language's name is a link. Prepare separate HTML documents for each language and call them in the appropriate link. |
| 3. | Design a single page website for your polytechnic containing a description of the courses offered. It should also contain some general information about the college such as its history, the campus, and its unique features and so on. The site should be colored and each section should have a different color. |
| 4. | Develop a web page using CSS to create a time table for the class using different border style. |
| 5. | Write a Java script code that converts the entered text to uppercase. |
| 6. | Write a Java script code to validate the username and password. The username and password are stored in variables. |
| 7. | Write a Java Script code using frames and Events (When a cursor moves over an object it should display the specification of the object in another frame). |
| 8. | Create a site containing banner advertisement at the top of the page. The ads are changed every 10 or 15 seconds. |
| 9. | Write jQuery Program for Count the number of milliseconds between the two click events on a paragraph. |
| 10. | Write jQuery Program for Disable/enable the form submit button & Blink the text. |
| PART B | |
| 11. | Write a PHP program to implement at least 10 string functions with description. |
| 12. | Write a PHP program to implement Date and Time Functions. |
| 13. | Create a PHP script which display the capital and country name from the given array. Sort the list by the name of the country. |

| | |
|-----|--|
| 14. | Write a PHP script to display table with implementing Form Processing Controls of Insert and Delete data from data base. |
| 15. | Create a simple shopping - cart script using PHP and MySQL. |

BOARD EXAMINATION

NOTE:

Students should write one program from **PART A** and one program from **PART B**.

DETAILED ALLOCATION OF MARKS

| | |
|--|-----------|
| Writing answer for any one program from PART – A | 20 Marks |
| Writing answer for any one program from PART – B | 25 Marks |
| Executing program – PART - A | 20 Marks |
| Executing program – PART - B | 20 Marks |
| Result with printout – PART - A | 5 Marks |
| Result with printout – PART - B | 5 Marks |
| VIVA – VOCE | 5 Marks |
| TOTAL | 100 Marks |

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LIST OF EQUIPMENTS

Hardware Requirement

1. Desktop Computers – 30 Nos.
2. Laser Printer - 1 No

Software Requirement

1. Notepad / Notepad++ / Dreamweaver
2. Apache XAMPP
3. Any Browser



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN INFORMATION TECHNOLOGY

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021 onwards
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4052460 – JAVA PROGRAMMING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

**SYLLABUS
N-SCHEME**

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 Diploma in Information Technology

Subject Code : 4052460

Semester : IV

Subject Title : Java Programming Practical

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16
weeks

| Subject | Instructions | | Examination | | | Duration |
|----------------------------------|-----------------|---------------------|------------------------|-----------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | |
| | | | Internal Assessment | Board Examinations | Total | |
| Java Programming Practical | 4 | 64 | 25 | 100* | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

RATIONALE:

To understand various concepts of JAVA and to familiarize Java environment to create, debug and run Java programs.

OBJECTIVES:

- Develop programs using different operators and expressions.
- Develop programs using Iterative statements.
- Develop programs using arrays
- Develop applications using Vectors.
- Create classes and objects with constructors
- Solve problems using inheritance

- Handle exception arising in programs.
- Use multithreading in programs
- Develop programs using File
- Create Applet programs
- Develop programs using Graphics & Color classes
- Use GUI components to develop GUI applications

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DETAILED SYLLABUS

Contents: Practical

PART – A

1. Write a program to read the temperature in Celsius and convert into Fahrenheit.
2. Write a program to read 2 integers and find the largest number using conditional operator.
3. Write a program to read an integer and find the factorial of a number.
4. Write a program to implement Vector class and its methods.
5. Write a program to read a string and check whether it is palindrome or not.
6. Write a program to create a class with following data members
 1. Register number 2. Name
 3. Marks in 3 subjects and member functions
 1. parameterized constructor – to assign values to members
 2. method to find total mark
 3. method to display register number, name, total markCreate 3 objects from the above class and use the members
7. Write a program that accepts radius of a circle from command line and display its area.

PART – B

8. Write a program to implement multilevel inheritance.
9. Write a program to create a own exception subclass that throws exception if the given number is not in a range of numbers.
10. Write a program that creates three threads. First thread displays “Good Morning” everyone second, the second thread displays “Hello” every two seconds and the third thread displays “Welcome” every three seconds.
11. Write a program to create a file using Byte stream or Character stream class.
12. Write a program to demonstrate Mouse events.
13. Write a program to display basic shapes using Graphics class and fill them using Color class
14. Write a program to create a simple calculator to perform addition, subtraction, multiplication and division using button, label and text field.

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BOARD EXAMINATION

NOTE:

Students should write one program from **PART A** and one program from **PART B**.

DETAILED ALLOCATION OF MARKS

| SCHEME OF VALUATION | |
|--|------------------|
| Writing answer for any one program from PART – A | 20 Marks |
| Execution PART – A | 20 Marks |
| Result and Print out PART – A | 5 Marks |
| Writing answer for any one program from PART – B | 25 Marks |
| Execution PART – B | 20 Marks |
| Result and Print out PART – B | 5 Marks |
| Viva voce | 5 Marks |
| TOTAL | 100 Marks |

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LIST OF EQUIPMENTS

HARDWARE

1. Desktop Computers – 30 Nos
2. Printer – 1 No

SOFTWARE

1. Any Text Editor
2. JDK 1.7 or above
3. Java enabled Browser



DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN INFORMATION TECHNOLOGY

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021 onwards
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**4052470 – RELATIONAL DATABASE
MANAGEMENT SYSTEM PRACTICAL**

CURRICULUM DEVELOPMENT CENTRE

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : 1046 DIPLOMA IN INFORMATION TECHNOLOGY

Subject Code : 4052470

Semester : IV

Subject Title : RELATIONAL DATABASE MANAGEMENT SYSTEMS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

| Subject | Instructions | | Examination | | | Duration |
|--|--------------|------------------|---------------------|--------------------|-------|----------|
| | Hours / Week | Hours / Semester | Marks | | | |
| | | | Internal Assessment | Board Examinations | Total | |
| Relational Database Management Systems Practical | 4 | 64 | 25 | 100* | 100 | 3 Hrs. |

* Examinations will be conducted for 100 marks and it will be reduced to 75 marks.

RATIONALE:

The main objective of this practical subject is to provide basic and advanced concepts of MySQL. MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing records in the database. MySQL is open-source and free software under the GNU license.

This practical includes all topics of MySQL database that provide for how to manage database and manipulate data with the help of various SQL queries.

OBJECTIVES:

On Completion of the following exercise, the students must be able to

- How to install, configure and connect to MySQL server and MySQL workbench in Windows.
- Understand basic concepts of how a database stores information via tables.
- Understand SQL syntax used with MySQL.
- Learn how to retrieve and manipulate data from one or more tables.
- Learn how to filter data based upon multiple conditions.
- Understand the advantages of stored functions and procedures.
- Learn way of connecting to MySQL through PHP, and how to create tables, enter data, select data, change data, and delete data. Connect to SQL server and other data sources.

DETAILED SYLLABUS

Contents: Practical

PART – A

1. Install, configure and connect to MySQL server and MySQL workbench in windows. Create a database, backup and restore the database.
2. To study Basic MySQL commands (create database, create table, use, drop, insert) and execute the following queries using these commands:
 - Create a database named 'employee'.
 - Use the database 'employee' and create a table 'emp' with attributes 'ename', 'ecity', 'salary', 'enumber', 'eaddress', 'deptname'.
 - Create another table 'Company' with attributes 'cname', 'ccity', 'empnumber' in the database 'employee'.
3. To study the viewing commands (select, update) and execute the following queries using these commands:
 - Find the names of all employees who live in Chennai.
 - Increase the salary of all employees by Rs.5,000.
 - Change the company city to Chennai where the company name is 'TCS'.

4. To study the commands that involve compound conditions (and, or, in, not in, between, not between, like, not like) and execute the following queries using these commands:

- Find the names of all employees who live in 'Chennai' and whose salary is between Rs.20,000 to Rs.30,000.
- Find the names of all employees whose names begin with either letter 'A' or 'B'.
- Find the company names where the company city is 'Chennai' and the number of employees is not between 5000 and 10,000.
- Find the names of all companies that do not end with letter 'A'

5. a) Create a database 'polytechnic_collee'. Create 2 users namely 'staff' and 'student'.

- Grant all privileges to the user 'staff' and grant only 'create' privilege to 'student' user and verify the same.
- Revoke all privileges to the 2 users and verify the same.

b) Implement the following transactions control statements.

- i) Commit ii) Rollback iii) Save point

6. Create table 'author' with the following structure

author_id
author_name
address
mobile
book_title
pages
published_on

- i) Insert 4 books published by 3 authors each. (12 records)
- ii) Fetch all the rows and observe how the data duplicated.
- iii) Apply 1st and 2nd normal forms to fix it.

7. To study the commands for views and execute the following queries using these commands:

- Create a view having ename and ecity
- In the above view change the ecity to 'Chennai' where ename is 'John'.
- Create a view having attributes from both the tables.
- Update the above view and increase the salary of all employees of IT department by Rs.1000.

8. Create a library table with proper fields. Create another table called library1 and insert rows from library table.

Hint:

```
CREATE TABLE new_table LIKE original_table;  
INSERT INTO new_table SELECT * FROM original_table;
```

PART – B

9. Create a table to store the details of a customer in a Bank. Do some transactions like withdrawal, deposit. Find the Balance amount(Credit Limit). Based on customer's credit limit, write a program using **IF** or **CASE** flow control statements to find the customer levels namely SILVER, GOLD or PLATINUM.

If the Credit limit is

- greater than 50K, then the customer level is PLATINUM
- less than 50K and greater than 10K, then the customer level is GOLD
- less than 10K, then the customer level is SILVER

10. Create two tables with the following structure.

a) users - table name

user_id - UNSIGNED, INT, AUTO INCREMENT, PRIMARY KEY
username - VARCHAR (60)
password - VARCHAR (128)
email - VARCHAR (255)

b) users_profiles

user_id - FOREIGN KEY refers to user_id field of user table

first_name - VARCHAR(60)

last_name - VARCHAR(60)

mobile - VARCHAR(15)

- i) SELECT all the users along with their profile details. (Hint: Use INNER JOIN)
- ii) SELECT the users who do not have profiles (Hint: USE LEFT JOIN and exclude the rows generated with NULL values from joining table)

11. Create an employee database and create a stored procedure that accepts employee_id as input and returns complete details of employee as output.

12. Create two tables with the following structure

Authors

author_id - INT

name VARCHAR (60)

titles_count INT -- holds the total number numbers of titles authored.

Titles

author_id - INT

name VARCHAR (512) -- name of the title

- a. Create a trigger to update the titles count field of respective row in authors table each time a title gets inserted into titles table.
- b. Create **log table** with the following structure

author_id – INT

name VARCHAR (512) -- name of the title

status VARCHAR(25) --- ADDITION,DELETION,UPDATION

and insert an entry in that table each time the tile is added, deleted or updated.

Use a trigger to accomplish this.

13. Create a table containing phone number, user name, address of the phone user.

Write a function to search the address using phone number.

14. Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor to update the employee.
15. Write a program to connect PHP with MySQL and create a database using PHP MySQL.

BOARD EXAMINATION

NOTE:

Students should write one program from **PART A** and one program from **PART B**.

DETAILED ALLOCATION OF MARKS

| | |
|--|-----------|
| Writing answer for any one program from PART – A | 20 Marks |
| Writing answer for any one program from PART – B | 25 Marks |
| Executing program (PART – A) | 20 Marks |
| Executing program (PART – B) | 20 Marks |
| Result with printout (PART – A) | 05 Marks |
| Result with printout (PART – B) | 05 Marks |
| VIVA – VOCE | 05 Marks |
| TOTAL | 100 Marks |

LIST OF EQUIPMENTS

HARDWARE REQUIREMENTS

1. Desktop Computers – 30 Nos
2. Printer – 1 Nos

SOFTWARE REQUIREMENTS

1. MySQL 5.5.20