



પરિપત્ર:

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટીની સાયન્સ વિદ્યાશાખાનાં અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજોનાં આચાર્યશ્રીઓને સવિનય જણાવવાનું કે સાયન્સ વિદ્યાશાખા હેઠળનો PGDCA નો સેમેસ્ટર-૧ અને ૨ નો અભ્યાસક્રમ આ સાથે સામેલ છે.

માનનીય કુલપતિશ્રીની મંજૂરી અનુસાર સદર અભ્યાસક્રમ શૈક્ષણિક વર્ષ જુન, ૨૦૨૩ થી અમલવારી કરવાની રહે છે. સાયન્સ વિદ્યાશાખાનાં PGDCA વિષયનો અભ્યાસક્રમ ચલાવતી તમામ સંલગ્ન કોલેજો ધ્વારા તેની અમલવારી કરવા જણાવવામાં આવે છે.



Signature
OSD (એકેડેમિક)

ક્રમાંક/બીકેએનએમયુ/એકેડેમિક/૧૯૩૦/૨૦૨૩-૨૦૨૪

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી,

સરકારી પોલીટેકનિક કેમ્પસ,

ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી રોડ,

ખડીયા, જૂનાગઢ-૩૬૨૨૬૩

તા.૧૮/૧૦/૨૦૨૩

પ્રતિ,

- ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી સંલગ્ન સાયન્સ વિદ્યાશાખાનાં PGDCA નો અભ્યાસક્રમો ચલાવતી તમામ કોલેજોના આચાર્યશ્રીઓ તરફ....

નકલ સાદર રવાના:-

- માન.કુલપતિશ્રી/કુલસચિવશ્રીનાં અંગત સચિવશ્રી.
- પરીક્ષા નિયામકશ્રી, ભક્તકવિ નરસિંહ મહેતા યુનિવર્સિટી, જૂનાગઢ

નકલ રવાના જાણ તથા યોગ્ય કાર્યવાહી અર્થે:

- સીસ્ટમ મેનેજરશ્રી, આઈ.ટી.સેલ વિભાગ (વેબસાઇટ ઉપર પ્રસિદ્ધ થવા અર્થે.)

BHAKTA KAVI NARSINH MEHTA UNIVERSITY - JUNAGADH

(Gujarat) INDIA



CURRICULAM FOR
Post Graduate Diploma in Computer Application (PGDCA)
(Semester - 1)
Effective From June – 2023

BHAKTA KAVI NARSINH MEHTA UNIVERSITY**Post Graduate Diploma in Computer Application (PGDCA)**

[1 Year - Two Semester Full Time Program]

Ordinance, Regulations and Examination Scheme:**Ordinance:**

- O. – PGDCA – 1** Candidate seeking admission to the Post Graduate Diploma in Computer Science and Application must have a Bachelor degree of minimum three years duration or equivalent from any recognized university.
- O. – PGDCA – 2** The duration of the course will be full time one academic year. The examination for the post graduate diploma in computer science and applications will be conducted under the semester system. For this purpose, the academic year will be divided into two semesters. No candidate will allowed joining any other course simultaneously.
- O. – PGDCA – 3** No candidates will be admitted to any semester examination for PGDCA unless it is certified by the head, computer centre that he has attended courses of study to the satisfaction of the head of the institute recognized for teaching courses of study in post graduate diploma in computer science and applications.
- O. – PGDCA – 4** Candidate desirous of appearing at any semester examination of the post graduate diploma in computer science and applications must forward their applications in the prescribed form to the controller of examination, through the head of institute on or before the date prescribed for the purposes under the relevant ordinance.
- O. – PGDCA – 5** After successful passing semester - 1 candidate awarded CCC certificate, after passing semester - 1 and semester - 2 candidates will be awarded CCC+ certificate.

Regulations:

- R. – PGDCA - 1** A candidate fails in any number of subjects in the first semester examination will be permitted to continue his studies at a subsequent semester.

The standard of passing the P.G.D.C.A. degree examination will be as under:

- R. – PGDCA - 2**
- (1) To pass any semester examination of the P.G.D.C.A. degree, a candidate must obtain at least 40% marks in the university examination separately in each course of theory and practical.
 - (2) Class will be awarded based on Earned Grade Point, SGPA and CGPA as per rules of University.

Marks and credit hours of each course

- R. – PGDCA - 3**
- Marks of Internal examination, university examination and credit hours will be as under:
 - 1. Total marks of each theory course are 100 (university examination of 70 marks + internal examination of 30 marks).
 - 2. Marks of each unit in the course are equal (i.e. 14 Marks). Total marks of each

course are $14 \times 5 = 70$ for university examination.

3. Credit hours (lectures) for each unit in the course are equal (i.e. 12 hours). Total credit hours (lectures) of each course are $12 \times 5 = 60$.

4. Total marks of each practical and project-viva course are 100. No internal examination of marks in practical and project-viva courses.

Structure of Question Paper

- Question Paper contains 5 questions (each of 14 marks). Every question will be asked from corresponding unit as specified in the syllabus of each course. (i.e. Question-1 from Unit No. 1 and remaining questions from their corresponding units)
- Every question is divided in Two parts like (a), (b)
Part (a) contains Four objective type questions (not MCQ) like definition, True or False, Fill in the blanks, reason, answer in one line, answer in one word etc., each of one marks and no internal option.
Part (b) contains four questions each of Five marks and student will attempt any two out of four.

R. – PGDCA - 4

R. – PGDCA - 5

The following is the syllabus of various courses to be studied for the Post-graduate Diploma in Computer Science and Applications.

BHAKTA KAVI NARSINH MEHTA UNIVERSITY
Post Graduate Diploma in Computer Application
[1 Years - Two Semester Full Time Program]

Semester – 1

Code	Course Name	No. Of Lectures/ Lab (Per Week)	Credit
CS - 01	Programming In C	5	5
CS - 02	Networking, Internet & Web Page Development	5	5
CS - 03	Comp. Fundamentals & Emerging Tech.	5	5
CS - 04	Office Automation Tools & Packages	5	5
CS - 05	Practical – 1 (Based On CS - 01)	5	5
CS - 06	Practical – 2 (Based On CS - 02 & CS – 04, Libre Office)	5	5
Total Credits of Semester - 1			30

CS - 01: PROGRAMMING IN C

Objective: To develop basic programming skill, concept of memory management and file concept.

Unit : 1

Introduction of C Language

- Introduction to Programming
- Various Computer Languages
- History & Overview of C Language
- Difference between traditional C and modern C
- C character set
- C tokens
 - Keywords
 - Constants
 - Strings
 - Identifiers and variables
 - Operators
- All 8 operators & Hierarchy of operators
- Data types in c
- Type casting & Type Conversion
- PRE-PROCESSORS IN C

Introduction of Logic Development Tools

- Introduction of Logic & Basic of Algorithm.
- Basics of Flow Chart
- Dry-run and its Use.
- Other Logic development techniques (Algorithm and Flowchart Based on Programming)

Unit : 2

Branching & Looping

- Decision structure
 - If statements(All Types)
 - Switch statement
 - Conditional ternary operator
- Looping Structures
 - For loop
 - Do...while loop
 - While loop
 - Nesting of loops
- Jumping statements
 - Break statement
 - Continue statement
 - Go to statements

Unit : 3

Library Functions

- Introduction of Library Function
- Brief View of Header Files(stdio.h, conio.h, math.h, string.h, stdlib.h, ctype.h, graphic.h, process.h, dos.h)
- Types of library functions

String Function:	strcpy, strncpy, strcat, strncat, strchr, strcmp, strncmp, strlen, strstr
Mathematical Functions:	ceil, div, exp, fabs, floor, fmod, log, pow, sqrt
Date & Time Functions:	clock, time, gmtime, localtime
Graphics Functions:	initgraph, closegraph, arc, line, circle, ellipse, getx, putx, setcolor, setbkcolor
I/O Formatting Functions:	printf, scanf, getc, getchar, gets, putc, putchar, puts
Miscellaneous Functions:	delay, clrscr, isalnum, isalpha, isdigit, islower, isprint, isspace, isupper, toupper, tolower
Standard Library functions:	abs, atof, atol, exit, free, rand
Memory Allocation Functions:	malloc, realloc, calloc

User Define Functions (udf)

- Concept of User Define Function
- Types of user defined functions
- call by value & call by reference
- Nesting & Recursion
- Storage classes

Unit : 4

Array

- Concept of Array
- Types of arrays
 - Single dimensional array
 - Two dimensional array
 - Multi-dimensional array
- String arrays
- Array with functions using UDF
- Use of Arrays in Programming

Structures

- Concept of Structure
- Initializations and declarations
- Array with structures
 - Array of Structure
 - Array Within Structure
- Udf with structures
- Nested structures
- Introduction to union
- Difference between Structure & Union

Unit : 5

Pointers

- Concept of Pointers
- Pointer to Variables
- Pointer to Array
- Pointer within Array
- Pointer To Structure
- Pointers within structure
- Pointer to Pointer
- Use of pointers in Dynamic Programming

File Handling

- Concept of data files

- Importance of file handling
- I/O Operation
- Command line arguments

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1	Programming in ANSI C	E. Balaguruswami
2	Let Us C	Yashwant Kanetkar.
3	Working with C	Yashwant Kanetkar.
4	Programming in C	Schaum Series publication.

Web site References :

- <https://www.tutorialspoint.com/cprogramming/index.htm>
- <http://www.eskimo.com/~scs/cclass/notes/top.html>
- <http://c-faq.com/>
- <http://www.learn-c.org/>
- https://www.tutorialspoint.com/cprogramming/cprogramming_tutorial.pdf
- <https://www.w3schools.in/c-tutorial/>
- <https://www.javatpoint.com/c-programming-language-tutorial>

CS – 02 : NETWORKING & INTERNET ENVIRONMENT

Objective: To understand basic terms of computer networks and Internet, to give knowledge of Scripting languages like HTML, CSS and Java Script

Unit : 1

Introduction to Computer Network

- Basics of Computers
- Computer Network
- Type of Computer Network
- Network Topology
- OSI Reference Model (Introduction)
- TCP/IP
- Internet Terminology
- ISP (Internet Service Provider)
- Intranet
- VSAT (very small aperture terminal)URL

Unit : 2

Application of Internet

- World Wide Web (WWW)
- Types of Search Engine
- Remote Login
- Electronic Mail (Email)
- Concept and use of : E-Commerce, E-Business, E-Governance, Mobile Commerce
- Website Basics (WebPages; Hyper Text Transfer, Domain name server, Protocol, File Transfer Protocol, Domain Names; URL , Protocol Address; Website[Static, Dynamic, Responsive], Web browser, Web Servers; Web Hosting, web portal, domain name server
- Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers
- Types of Payment System (Digital Cash, Electronic Cheque, Smart Card, Debit/Credit Card)

Unit : 3

Basic of HTML & Advance HTML 5

- Fundamental of HTML
- Basic Tag and Attribute
- The Formatting Tags
- The List Tags & Link Tag
- inserting special characters,
- adding images and Sound,
- Table & Frame in HTML
- Forms
- HTML 5 Document Structure & Syntax (section, article, aside, header, footer, nav, dialog)
 - Attributes of HTML 5
 - Web Form (datetime, date, month, week, time, number, range, email, url)
- Audio / Video

Unit : 4

Cascading Style Sheet & CSS 3

- Introduction to CSS
- Types of Style Sheets
- Class, ID Selector
- CSS Text & Font Properties
- CSS Background Properties
- CSS List Properties
- CSS Margin & Padding Properties
- CSS Comments
- CSS 3
 - Border Property
 - Background & Gradient Property
 - Drop Shadow Property
 - 2D & 3D Transform Property
 - Transition Property

Unit : 5

Java Script

- Introduction to JavaScript
- Variables
- JavaScript Operators
- Conditional Statements
- JavaScript Loops
- JavaScript Break and Continue Statements
- Dialog Boxes
- JavaScript User Define Function & Built in Function (string, Maths, Array, Date)
- Events (onclick, ondblclick, onmouseover, onmouseout, onkeypress, onkeyup, onfocus, onblur, onload, onchange, onsubmit, onreset)
- Form Validation & E-mail Validation

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1	HTML in 10 steps or less	Laurie Ann Ulrich, Robert G. Fuller
2	Internet The Complete Reference	Young.
3	World Wide Web Design with Html	C Xavier.
4	Internet for Every One	Leon.
5	Practical Html 4.0	Lee Philips.
6	MCSE Networking Essential Training Guides.	
7	Mastering In FrontPage	BPB

Web site References :

- <https://www.javatpoint.com/html-tutorial>
- <https://www.tutorialspoint.com/html/index.htm>
- <https://www.w3schools.com/html/>
- <https://www.csstutorial.net/>

CS – 03 : COMP. FUNDAMENTALS & EMERGING TECH.

Objective: To aware basics of computer and emerging technology

Unit : 1**Introduction of Computers**

- Basics of Computers
 - What is Computer?
 - Characteristics of Computer
 - Data Processing Cycle(Data → Process →information)
- Classification of Computer by Data Processed
 - Analog, Digital and Hybrid Computers
- History and Generations of Computers
 - First to Fifth Generation Computers
- Classification of Computer by Processing Capabilities
 - Micro, Mini, Mainframe and Super Computers
- History and Generations of Computers .
 - First to Fifth Generation Computers
- Simple Model of Computer
 - Input Devices
 - CPU (Central Processing Unit)
 - Arithmetic & Logic Unit
 - Control Unit
 - Internal Memory
- Output Devices
- Secondary Storage Devices

Internal/External parts used with Computer Cabinet

- Introduction to Mother board
- Types of Processors .
 - Dual Core, Core 2 Duo, i2, i3, etc ...
- Memory structure and Types of Memory
 - RAM (SRAM, DRAM, DDR.)
 - ROM (ROM, PROM, EPROM, EEPROM,Cache)
- Slots
 - ISA Slots / PCI Slots / Memory Slots/SATA
- Sockets
- Cables
 - Serial Cable / Parallel Cable / USB Cable/HDMI
- Ports
 - USB (2.0 &3.0)/ Serial / Parellel
- Power Devices :UPS
- Graphic Cards
- Network card, Sound Card

Unit : 2**Input Devices**

- Introduction
- Types of Input Devices
 - Keyboard / Mouse / Trackball / Glide - Pad / Game Devices Joystick, etc.) / Light Pen / Touch Screen / Mic (Sound Input) / Camera (Photo and Video Input) / POS (Point of Sale) Terminal (Scanners, etc)
 - MIDI(Musical Instrument Digital Interface) Keyboard,

- Wireless Devices (Keyboard, Mouse, etc)
- Types of Scanners
 - OMR, MICR, OBR

Output Devices

- Introduction
- Types of Output Devices
- Types of Monitors
 - CRT Display Units
 - LCD
 - LED
 - OLED
- Types of Printers
 - Impact (Dot Matrix Printer, Daisy Wheel Printer)
 - Non Impact(Ink Jet Printer, Laser Printer)
- Plotters
- Other Devices
 - Fascimile(FAX)
 - Headphone
 - SGD (Speech Generating Device)
 - COM (Computer Output Microfilm)
 - Google Glass

Unit : 3

Data Storage

- Introduction
- Types of Magnetic Storage Devices
 - Floppy Disk/ Hard Disk / Magnetic Tape / Magnetic Disks
- Storage Mechanism of Magnetic Storage Devices
 - Tracks / Sectors / Clusters / Cylinders
- Reading / Writing Data to and from Storage Devices
- Seek Time / Rotational Delay - Latency / Access
- Time /Response Time
- Other Storage Devices
 - USB - Pen Drive/CD/DVD/Blu-Ray Disk. Flash Memory, Cloud Storage(Like Google Drive, OneDrive)

Unit : 4

Numbering System and Codes

- Introduction to Binary Codes /
 - Nibble / Bit / Byte / Carry Bit / Parity Bit / Sign Bit
 - KB / MB / GB / TB / HB (etc ...)
- Types of Numbering System
 - Binary / Octal/Decimal / Hex-Decimal
- Conversion
 - Binary to Octal, Decimal and Hexa-Decimal
 - Decimal to Binary, Octal and Hexa-Decimal
 - Octal to Binary, Decimal and Hexa-Decimal
 - Hexa-Decimal to Binary, Octal and Decimal
- Binary Arithmetic
 - Addition
 - Subtraction (1's Complement and 2's Complement)

- Division .
- Multiplication
- Types of Codes
 - ASCII/BCD / EBCDIC / UniCode
- Parity Check
 - Event Parity System / Odd Parity System

Languages, Operating Systems and Software Packages

- Introduction
- Translator (Assembler / Compiler / Interpreter)
- Types of Languages
 - Machine Level Language
 - Assembly Level Language
 - High Level Language (3GL, 4GL, 5GL, etc.)
- Types of Operating Systems
 - Batch Operating System
 - Multi Processing Operating System
 - Time Sharing Operating System
 - Online and Real Time Operating System

Unit : 5

Emerging Technologies and Virus

- Different Communication methods
 - GIS / GPS / COMA / GSM/ VOLTE
- Communication Devices
 - Cell Phones / Modem / Infrared / Bluetooth / WiFi / LiFi
- **Virus**
 - Introduction to Virus and related terms
 - Origin and History
 - Types of Virus & prevention techniques from virus
- **Introduction to Blockchain**
 - What is Blockchain?
 - Building Blocks of Blockchain
 - Types of Blockchain
- **Cloud Computing**
 - What is Cloud Computing?
 - Characteristic & Service Models(Iaas, Paas, Saas)
- **Cyber Security**
 - What is cyber security ?
 - Indian cyberspace
 - Security concepts
 - Basic cryptography (symmetric, Asymmetric, hash functions)
 - Digital certificate & public key infrastructure

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1	Computer Fundamentals	By P.K.Sinha
2	Fundamental of IT for BCA	By S.Jaiswal
3	Engineering Physics	By V.K.Gaur
4	Teach Yourself Assembler	By Goodwin.

Web site References :

- <https://www.javatpoint.com/computer-fundamentals-tutorial>
- https://www.tutorialspoint.com/computer_fundamentals/index.htm
- https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf
- http://www.kvadilabad.org/admin/downloads/1788662251computer_fundamentals_tutorial.pdf

CS – 04 : Office Automation Tools & Packages

Objective: To Basic Knowledge of Computer

Unit :1

INTRODUCTION TO GUI BASED OPERATING SYSTEM

- Introduction
- Basics of Operating System
 - Operating system
 - Basics of popular operating system (LINUX, WINDOWS)
- File and Directory Management
- Types of files
- The User Interface
 - Task Bar
 - Icons
 - Start Menu
 - Running an Application
- Operating System Simple Setting
- Changing System Date And Time
- Changing Display Properties(Wallpaper, Screen Resolution, Screen Saver, etc)

Unit : 2

WORD PROCESSING (Microsoft Word)

- Introduction to Word Processing Software
- Objectives
- Word Processing Basics
- Opening Word Processing Package
 - Menu Bar
- Opening and closing Documents
 - Opening Documents
 - Save and Save as
 - Page Setup
 - Print Preview
 - Printing of Documents
- Text Creation and manipulation
- Document Creation
 - Editing Text
 - Text Selection
 - Cut, Copy and Paste
 - Font and Size selection
 - Alignment of Text
 - Adding Clip Art Pictures
 - Adding Images
 - Inserting Other Objects
- Formatting the Text
 - Paragraph Indenting
 - Bullets and Numbering
 - Changing case
- Using Format Painter
- Creating Columns inside a Page

- Page Layout and Margins
 - Setting Page Size
 - Changing Page Orientation
 - Setting Page Margins
 - Header and Footers
 - Inserting Watermark
- Table Manipulation
 - Draw Table
 - Changing cell width and height
 - Alignment of Text in cell
 - Delete / Insertion of row and column
 - Border and shading

Unit : 3

SPREAD SHEET (Microsoft Excel)

- Introduction to Spreadsheet Software
- Objectives
- Difference Between Worksheet and WorkBook
- Introduction to Rows, Columns, Cells
- Introduction to NameBox, Formula Bar
- Elements of Electronic Spread Sheet
 - Opening of Spread Sheet
 - Printing of Spread Sheet
 - Saving Workbooks
- Manipulation of Cells
 - Entering Text, Numbers and Dates
 - Creating Text, Number and Date Series
 - Editing Worksheet Data
 - Inserting and Deleting Rows, Column
 - Changing Cell Height and Width
 - Changing Borders and Colors of Cells
- Page Layout and Margins
 - Setting Page Size
 - Changing Page Orientation
 - Setting Page Margins
- Using Formulas
- Different Library functions (sum(), average(), count(), left(), right(), mid(),if(), or(), and(), not(), date(), now(), time())
- Introduction to Charts

Unit : 4

PRESENTATION (Microsoft Powerpoint)

- Introduction
- Objectives
- Introduction to Slides
- Basics
 - Using PowerPoint
 - Opening A PowerPoint Presentation
 - Saving A Presentation

- Creation of Presentation
 - Creating a Presentation Using a Template
 - Creating a Blank Presentation
 - Entering and Editing Text
 - Inserting And Deleting Slides in a Presentation
- Preparation of Slides
 - Adding Clip Art Pictures
 - Inserting Other Objects
 - Resizing and Scaling an Object
 - Working with Color and Line Style
 - Adding Movie and Sound
 - Adding Headers and Footers
- Presentation of Slides
 - Viewing A Presentation
 - Choosing a Set Up for Presentation
 - Printing Slides And Handouts
- Slide Show
 - Running a Slide Show
 - Transition and Slide Timings
 - Automating a Slide Show

Unit : 5

Database and its Objects(Microsoft Access)

- Introduction to Access Database and its Objects
- Introduction to Tables
- Introduction to Query
- Introduction to Forms, Reports, Macros and Modules, Page
- Creating Database & Tables
 - Creating & Saving databases
 - Creating & Saving Tables
 - Working with data including insert, modify and delete records
- Navigating Database including records, find and replace
- Different types of Access data types
 - Primary keys
 - Foreign key
 - Composite key
 - Candidate key
- Defining relationship and setting up the referential integrity (Cascade update and Cascade Delete)

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1		
2		

Web site References :

- <https://support.office.com/>

CS – 05	PRACTICAL – 1 (Based on CS - 01) Programming in C Language	100 Marks
CS – 06	PRACTICAL – 2 (Based on CS – 02, CS – 04, Liber Office) HTML-5, CSS-3, MS - Word, MS - Excel, MS - Power Point, MS-Access and Macromedia Dream weaver & Liber Office	100 Marks
Note : ▪ Each session is of 3 hours for the purpose of practical Examination. ▪ Practical examination may be arranged before or after theory exam		

BHAKTA KAVI NARSINH MEHTA UNIVERSITY – JUNAGADH

(Gujarat) INDIA



CURRICULAM FOR

**Post Graduate Diploma in Computer Science & Application
(PGDCA)**

[Semester – 2]

Effective From June – 2023

BHAKTA KAVI NARSINH MEHTA UNIVERSITY
Post Graduate Diploma in Computer Science & Application
[1 Years - Two Semester Full Time Program]

Semester – 2

Code	Course Name	No. Of Lectures/ Lab (Per Week)	Credit
CS - 07	RDBMS Using Oracle	5	5
CS - 08	Web Programming Using PHP	5	5
CS - 09	SAD, Software Quality Assurance & Testing	5	5
CS - 10	Practical – 1 (Based On CS - 07)	5	5
CS - 11	Practical – 2 (Based On CS – 08 & CS – 09)	5	5
CS - 12	Project	5	5
Total Credits of Semester - 2			30

CS - 07 RDBMS Using Oracle

Objective:

- To learn database management system using Oracle

Unit: 1

DBMS Overview

- Introduction to DBMS
- Introduction to RDBMS
- Dr. E. F. Codd Rules
- Normalization

SQL and SQL*Plus

- Introduction to SQL
- SQL Commands and Datatypes
- Introduction to SQL*Plus
- SQL*Plus formatting commands
- Operator and Expression
- SQL v/s SQL*Plus

Unit: 2

Managing Tables and Data

- Creating and Altering tables (Including constraints)
- Data Manipulation Command like Insert, update, delete
- SELECT statement with WHERE, GROUP BY and HAVING, ORDER BY, DISTINCT, Special operator like IN, ANY, ALL, BETWEEN, EXISTS, LIKE
- Join (Inner Join, outer Join, self Join)
- Subquery, minus, intersect, union
- Built in functions
 - Numeric Function : abs, ceil, exp, floor, greatest, least, log, max, min, rem, round, sign, sqrt
 - Character Function : chr, concat, initcap, lower, ltrim, replace, rtrim, substr, treat, trim, upper
 - Date Function : add_mons, last_day, months_between, next_date, round(date), sysdate, systimestamp, trunc(date), to_date, to_char
 - Aggregate function : sum, count, avg, max, min
 - General functions : coalesce, case, when decode

Data Control and Transaction Control Command

- Creating user and role
- Grant
- Revoke
- What is Transaction?
- Starting and Ending Transaction
- Commit, rollback and SavePoint

Unit: 3

Other Oracle Database objects

- View
- Sequence
- Synonyms, Database Links
- Index
- Cluster , Snapshot

Backup & Recovery

- Backup & Recovery
 - Types of Backups (Control File Backups, Redo Log File Backups, Cold Backups, Hot Backups)
- Net 8
 - What is Net 8?
 - Why use Net 8?
 - Net 8 Features
 - Listener
 - Dispatcher

Unit: 4

Introduction to PL/SQL

- SQL v/s PL/SQL
- PL/SQL Block Structure
- Language construct of PL/SQL(Variables, Basic and Composite Data type, Conditions looping etc.)
- %TYPE and %ROWTYPE
- Using Cursor(Implicit, Explicit)
- Exception Handling

Advanced PL/SQL

- Creating and Using Procedure,Functions,
- Package,
- Triggers
- Creating Objects,
- Object in Database-Table
- PL/SQL Tables, Nested Tables, Varrays

Unit: 5

Oracle Database Structure

- Instance Architecture
 - Database Processes
 - Memory Structure.
 - Data files
- Creating & Altering Database
- Opening & shutdown Database

- Initialization Parameter
- Control Files, Redo Logs files
- Tablespace(Create, Alter, Drop)
- Rollback Segment (Create, Alter), (System & Transaction RBS)
- Oracle Blocks
- Import
- Export
- SQL*Loader
-

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1	SQL,PL/SQL The programming	Lang.Of Oracle Ivan Bayross - BPB
2	Oracle Database 12c The Complete Reference	Bob Bryla, Kevin Loney – Oracle Press
3	Oracle Database 12c SQL	Jason Price – Oracle Press
4	Oracle Database 12c PL/SQL Programming	McLaughlin – Oracle Press

Web site References:

- <https://www.oreilly.com/library/view/oracle-sqlplus-the/0596007469/ch01s01.html>
- https://docs.oracle.com/cd/B19306_01/server.102/b14357/qstart.htm
- <http://www.sql-plus.com/differences-between-sql-plus-and-sql.php>
- <http://www.oracle.com/us/corporate/features/database-12c/index.html>

CS – 08 : Web programming using PHP

Objective:

- To learn web programming & Learn to develop website using PHP

Unit: 1

Web Programming

- Static and Dynamic Web
- Client side & Server side Scripting
- Introduction to other Server side languages
- Webserver (IIS & Apache)
- Web Hosting, Virtual Host, Multi-Homing
- Distributed Web Server Overview,

PHP Basic

- Introduction to PHP
- PHP configuration in IIS & Apache Web server
- Understanding of PHP.INI file
- Understanding of PHP .htaccess file
- PHP variable
- Static & Global variables
- GET & POST method
- PHP Operators
- Conditional Structure & Looping Structure
- Array

Unit: 2

PHP Function

- **User Defined Functions:**
 - argument function
 - default argument function
 - variable function
 - return function
- **Variable Length Argument Functions:**
func_num_args, func_get_arg, func_get_args
- **Variable Functions:**
gettype, settype, isset, unset, strval, floatval, intval, print_r
- **String Functions:**
chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim, trim, substr, strcmp, strcasecmp, strpos, strrpos, strstr, stristr, str_replace, strrev, echo, print, explode, implode, join, md5, str_split, str_shuffle, ucfirst, ucwords.
- **Math Functions:**
abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand, bindec, decbin, hexdec, dechex, is_finite, is_infinite

- **Date Functions:**
date, getdate, setdate, checkdate, time, mktime, date_add, date_create, date_format, gmdate, localtime, strftime
- **Array Functions:**
count, list, in_array, current, next, previous, end, each, sort, rsort, asort, arsort, array_merge, array_reverse, array_diff, array_unique, array_key_exists, array_push, array_pop, array_search
- **Miscellaneous Functions:**
define, constant, include, require, header, die, exit
- **File Handling Functions:**
fopen, fread, fwrite, fclose, file_exists, is_readable, is_writable, fgets, fgetc, file, file_get_contents, fputs, file_put_contents, ftell, fseek, rewind, copy, unlink, rename, move_uploaded_file.

Unit: 3

Handling Form, Session Tracking & PHP Components

- Handling form with GET & POST
- Cookie
- Session
- Server Variable
- PHP Components:
 - PHP GD Library
 - PHP Regular expression
 - Uploading file
 - Sending mail using mail()
 - Sending mail using smtp()

AJAX

- What is AJAX
- PHP with AJAX
- How AJAX works with PHP
- Working with AJAX as background process
- Using JQuery with PHP
- JQuery AJAX with PHP

Unit : 4

Introduction of SQL, MySQL Functions

- Working with MySQL using PhpMyAdmin
- SQL DML Statement (Insert, Update, Select, Delete) Command
- MySQLi Functions:
mysqli_connect, mysqli_select_db, mysqli_query, mysqli_affected_rows,
mysqli_num_rows, mysqli_autocommit, mysqli_commit, mysqli_fetch_array,
mysqli_fetch_assoc, mysqli_fetch_object, mysqli_fetch_row, mysqli_prepare

Unit : 5

Web Services

- XML and JSON
- Introduction to JSON
- Installation & Configuration
- Resource Types
- JsonSerializable
- JSON Functions: json_decode, json_encode

jQuery

- What is jQuery?
- jQuery Syntax
 - jQuery Selector: Element Selector , Class Selector, ID Selector
- jQuery Events:
 - click, dblclick, keypress, keydown, keyup, submit, change, focus, blur, load, resize, scroll, unload
- jQuery Effects: hide show, fade, slide

jQueryUI

- Introduction JQueryUI
- JQueryUI Interactions (draggable, droppable, resizable , selectable, sortable)
- JQueryUI Widgets (accordion, autocomplete, button, datepicker, Dialog, Menu, Progressbar, slider, spinner, tabs, tooltip)

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1	Modern PHP: New Features and Good Practices	Josh Lockhart (ORELLY)
2	PHP Cookbook: Solutions & Examples for PHP Programmers	David Sklar and Adam Trachtenberg (ORELLY)
3	Programming PHP	Kevin Tatroe and Peter MacIntyre (ORELLY)
4	PHP for the Web: Visual QuickStart Guide (4th Edition)	Larry Ullman (Peachpit Press)

Web site References:

- <http://php.net/manual/en/book.mysql.php>
- https://www.w3schools.com/php/php_ref_mysql.asp
- <https://www.tutorialspoint.com/index.htm>

CS – 09 : SAD, SOFTWARE QUALITY & ASSURANCE TESTING

Objective:

- To learn web programming & Learn to develop website using PHP
-

Unit: 1

System Analysis & Design AND Software Engineering

- Definitions:
 - What is system
 - Subsystem,
 - business system
 - Information system
 - System Analyst Role:
 - Information Analyst
 - Systems Designer & Programmer
 - SDLC
 - Fact - finding techniques(Interview, Questionnaire, Record review and observation)
 - Tools for Documenting Procedures and Decisions
 - Decision Trees and Decision Tables
 - Data Flow analysis Tool
 - Types of DFD
 - DFD(context and zero level) and Data Dictionary
 - Software Engineering (Brief introduction)
-

Unit: 2

Basic of Software Testing

- Introduction to software Testing
- Software faults and failures
 - Bug
 - Error
 - Defect
 - Faults
 - Failures
- Testing Artifacts
 - Test case
 - Test Script
 - Test Plan
 - Test Suite

Types of software Testing, Verification and Validation

- Static Testing
- Dynamic Testing
- Test Levels
 - Unit testing
 - Integration Testing
 - System Testing

- Techniques of software Testing
- Black Box Testing
 - Equivalence Partitioning
 - Boundary Data Analysing
 - Decision Table Testing
 - State Transition Testing
- White Box Testing
 - Statement testing and coverage
 - Decision testing and coverage
- Grey Box Testing
- Non-functional Testing
 - Performance Testing
 - Stress Testing
 - Load Testing
 - Usability Testing
 - Security Testing

Unit: 3

Software Development Life Cycle

- Waterfall Model
- Iterative Model
- V-Model
- Spiral Model
- Big Bang Model
- Prototyping Model

Automated Testing

- Introduction
 - Concept of Freeware, Shareware, licensed tools
- Theory and Practical Case-Study of Testing Tools
 - Win runner
 - Load runner
 - QTP
 - Rational Suite

Unit : 4

Project Economics

- Concepts of Project Management
- Project Costing based on metrics
- Empirical Project Estimation Techniques
- Decomposition Techniques
- Algorithmic methods
- Automated Estimation Tools

Project Scheduling and Tracking

- Concepts of project scheduling and tracking
- Effort estimation techniques
- Task network and scheduling methods
- Timeline chart
- Pert Chart
- Monitoring and control progress
- Graphical Reporting Tools

Unit : 5

Concept of Quality Assurance

- Introduction to QA
- Quality Control (QC)
- Difference between QA and QC
- Quality Assurance activities

CAD Project Management Tool

- MS - VISIO for designing & Documentation
 - Flow Chart Design Using MS-VISIO
- MS - Project for controlling and Project Management

UML

- UML designing and skill based tools
- Overview of
 - Class Diagram
 - Use Case Diagram
 - Activity Diagram

	Class Room	Seminar	Expert Talk	Test	Total
No. Of Lecture	60	05	05	05	75

Reference Books:

No.	Name	Author / Publication
1	Analysis & design of Information system	James A. Senn
2	Fundamentals of Software Engineering	RajibMall (PHP)
3	Software Engineering - A Practitioner's Approach	Pressman
4	UML - A Beginner's Guide	Jasson Roff - TMH

Web site Reference

- http://en.wikipedia.org/wiki/Software_testing
- <http://www.onestoptesting.com/>
- <http://www.opensourcetesting.org/functional.php>

CS – 10

100 Marks

PRACTICAL – 1 (Based on CS – 07 & CS - 09)

CS – 07 – RDBMS Using Oracle

CS – 09 – SAD, Software Quality Assurance & Testing

- Each session is of 3 hours for the purpose of practical Examination.
- Practical examination may be arranged before or after theory exam

CS – 11

100 Marks

PRACTICAL – 2 (Based on CS – 08)

CS – 08 – Web Programming Using PHP

- Each session is of 3 hours for the purpose of practical Examination.
- Practical examination may be arranged before or after theory exam

CS – 12

100 Marks

PROJECT DEVELOPMENT (IN HOUSE)

(Project must be developed in the computer laboratory of concern institute under the supervision of faculties of concern institute on any subject of previous semester or current semester. (At the time of Project-Viva examination student must show Project Report (in hard copy) along with all the Workouts in workbook, implementation of project in SDLC Documentation, Program codes and project in running mode

Note :

- Project must be submitted before two week of commencement of theory exam.
- Project viva examination may be arranged before or after theory exam.
- During the project viva examination project must be run.

BHAKTA KAVI NARSINH MEHTA UNIVERSITY**Post Graduate Diploma in Computer Science & Application**

[1 Years - Two Semester Full Time Program]

Semester – 2**Paper Style**

Unit : 01

Question : 1 (A)	Answer The Following Question	(Only Three)	03
Question : 1 (B)	Answer The Following Question	(Any Two out of Three)	06
Question : 1 (C)	Answer The Following Question	(Any One out of Two)	05

Unit : 02

Question : 2 (A)	Answer The Following Question	(Only Three)	03
Question : 2 (B)	Answer The Following Question	(Any Two out of Three)	06
Question : 2 (C)	Answer The Following Question	(Any One out of Two)	05

Unit : 03

Question : 3 (A)	Answer The Following Question	(Only Three)	03
Question : 3 (B)	Answer The Following Question	(Any Two out of Three)	06
Question : 3 (C)	Answer The Following Question	(Any One out of Two)	05

Unit : 04

Question : 4 (A)	Answer The Following Question	(Only Three)	03
Question : 4 (B)	Answer The Following Question	(Any Two out of Three)	06
Question : 4 (C)	Answer The Following Question	(Any One out of Two)	05

Unit : 05

Question : 5 (A)	Answer The Following Question	(Only Three)	03
Question : 5 (B)	Answer The Following Question	(Any Two out of Three)	06
Question : 5 (C)	Answer The Following Question	(Any One out of Two)	05