

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar
Programme & Subject : B.Sc. Information Technology
Semester – V
US05CINT21 : OOPS Technology – I
(Syllabus Effective from June 2020)

Credits : 4

External : 70 Marks

Contact Hrs per Week : 4

University Examination Duration: 3 Hrs

All units carry equal weightage

Unit	Description in detail
I	Object Oriented Programming (OOP) Concepts and Introduction to C+ Structured programming vs. object oriented programming Basic OOP concepts : objects , classes , encapsulation , data hiding , inheritance, polymorphism Introduction to C++: structure of a C++ program, data types , variables, constants, expressions, statements and operators Usage of header files Control flow statements : if else, for loop, while loop, do while loop, switch, break and continue
II	Input/Output, Arrays and Working with Classes Basic I/O in C++ Arrays in C++ : Introduction, declaration, initialization of one , two and multidimensional arrays, operations on arrays Working with strings : Introduction, declaration, string manipulation and arrays of string Classes and objects in C++ Constructors : default, parameterized, copy, constructor overloading and destructor Access specifiers, implementing and accessing class members working with objects : constant objects, nameless objects, live objects, arrays of objects
III	Functions, Function Overloading and Inheritance Introduction to functions, library and user-defined functions, parameters passing, default arguments Functions overloading , inline functions, friend functions and virtual functions Inheritance: Introduction, derived class declaration, forms of inheritance and member access ability Constructor and destructor in derived class, construction invocation and data member initialization.
IV	Operator Overloading, Pointers and Files Operator overloading : Introduction, overloaded operators, unary operator overloading, operator keyword, operator return values binary operators overloading overloading with friend function Dynamic memory allocation Files : introduction and applications File operations : open, read, write, seek and close

Basic Text & Reference Books:-

1. E Balagurusamy : Object Oriented Programming in C++, Tata McGraw-Hill Publishing Co. Ltd.
2. Robert Lafore : Object Oriented Programming in Turbo C++, Guide, Galgotia Pub. (P) Ltd.
3. Barkakati N. : Object Oriented Programming in C++, PHI.
OOP's using C++ for Dummies.

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar
Programme & Subject : B.Sc. Information Technology
Semester – V

US05CINT22 : Visual Programming

(Syllabus Effective from June 2020)

Credits : 4

External : 70 Marks

Contact Hrs per Week : 4

University Examination Duration: 3 Hrs

All units carry equal weightage

Unit	Description in detail
I	<p>Introduction to .NET Framework and VB.NET .NET Architecture, .NET Languages, Microsoft Intermediate Language (MSIL), The Just-In-Time (JIT) compiler, Working with Assemblies, The .NET framework class library VB.NET - introduction, applications and types of projects Introduction to Visual Studio IDE Variables, Data Types, Constants and Operators Type Casting, Boxing and Unboxing, MsgBox and Inputbox Functions Working with arrays and strings, Creating simple Windows Application using VB.NET</p>
II	<p>VB.NET Basics Use of conditional statement (if), Multi branching statement (select) and With...End With statement, Looping Statement: DO, FOR, FOR EACH...NEXT and WHILE, Working with EXIT, CONTINUE and WITH statements Working with procedures – Introduction, types, use of parameters, parameter passing, calling procedures Working with modules, Working with Windows Forms – Introduction, life cycle, basic properties, methods and events, use of simple windows forms control, Working with SDI and MDI forms and Menus</p>
III	<p>Developing Windows Forms, Exception Handling Working with basic controls – Button, Text Box, Label, Radio Button, Check Box, Group Box, Checked List Box, Combo Box, List Box, Date Time Picker, HScroll Bar, Vscroll Bar, Picture Box, and Timer controls. Working with advanced controls – Link Label, Rich Text Box, Open Dialog, Save Dialog, Color Dialog, Font Dialog, TreeView, Progressbar Error Handling: Exception, Structured exception using try...catch and final Statement</p>
IV	<p>Persisting Data Using Databases and Files ADO.NET – Introduction and Applications ADO.NET – Architecture (Connected and Disconnected) Database connectivity using ADO.NET Use of Data sources, Server Explorer and working with Data Set Populating data in a DataGridView</p>

Basic Text & Reference Books:

1. Steven Holzner, VB.NET Black Book by Dreamtech publication.
2. Francesco Balena, Programming Microsoft Visual Basic.NET, Microsoft Press.
3. Bill Evjen, Billy Hollis, Bill Sheldon, Kent Sharkey and Tim McCarthy, Professional VB 2005 with .NET 3.0.

SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

Programme & Subject : B.Sc. Information Technology

Semester – V

US05CINT23 : Advanced Web Technology

(Syllabus Effective from June 2020)

Credits : 4

External : 70 Marks

Contact Hrs per Week : 4

University Examination Duration: 3 Hrs

All units carry equal weightage

Unit	Description
I	Basics of PHP and Control Structures Introduction to PHP, Advantages of PHP, Basic PHP Syntax. Variable in PHP, GET Method, POST Method. PHP Operators - Arithmetic, Increment/decrement. Assignment, Comparison, Logical, Ternary, String. Control Structures : if Statement, If...else, Elseif , switch, while, do-while, for, Foreach ,break, continue.
II	Array and Functions. Array Functions : (List, is_array, count, sizeof, in_array, current, next, prev, end, each, array_walk, Sort, rsort, array_merge, array_combine, array_values, array_reverse, array_push, array_pop). User Define Functions: Function arguments ,Default argument values, Variable-length argument lists. Returning values, Variable functions.
III	Miscellaneous Functions, Session and Cookies. String Functions :(chr, strtolower, strtoupper, ucfirst, ucwords, strlen, substr, strcmp, strcasecmp, substr_count, str_replace, strpos). Maths Functions :(abs, ceil, floor, fmod, min, pow, sqrt, exp, rand, bindec, octdec, hexdec, decbin, decoct, dechex). Date/Time Functions :(date, getdate, checkdate, time, localtime). File Functions :(fopen, fread, fwrite, fclose, file_exists, is_readable, is_writable, fgets, fgetc, file, file_get_contents, file_put_contents, ftell, fseek, copy, rename, filesize, filetype). Session. Cookies, Introduction to GD Library, PHP GD Library
IV	My SQL Functions Introduction to MySQL ,Installing MySQL ,MySQL user Administration. PHP Myadmin, MySQL Data types. Connecting to MySQL : mysql_connect, mysql_close, mysql_select_db. MySQL Queries : mysql_query (create, insert, select, update, delete) , mysql_list_dbs, mysql_list_tables , mysql_list_fields, mysql_free_result. Fetchig Data: mysql_num_rows, mysql_affected_rows, mysql_fetch_array, mysql_fetch_row, mysql_fetch_object, mysql_num_fields, mysql_fetch_field, mysql_field_name, mysql_field_type, mysql_field_len, mysql_field_table, mysql_errno, mysql_error.

Basic Text and Reference Books:

1. SAMS Teach Yourself PHP4 in 24 Hours by Matt Zandstra
2. A Programmer's Introduction to PHP 4.0 by W. J. Gilmore
3. Web Development using PHP, Bharat & Co, (ISBN No. 978-93-81786-39-0)

SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

Programme & Subject : B.Sc. Information Technology

Semester – V

US05CINT24 : Software Engineering

(Syllabus Effective from June 2020)

Credits : 4

External : 70 Marks

Contact Hrs per Week : 4

University Examination Duration: 3 Hrs

All units carry equal weightage

Unit	Description
I	Introduction Defining Software & Introduction to SE, Characteristics of Software Activities of Software Process Umbrella Activities, Process Flow (Linear, Iterative, Evolutionary, Parallel) Process Model: Waterfall, Prototype, Iterative, Enhancement, Spiral(Overview)
II	System Requirement Specification and Software Project Planning Introduction to System Requirement Specification and need of SRS Requirement Specifications, Characteristics & Components of SRS, Specification Languages (Structured English, Regular Expressions & Decision Tables) (Definition Only) Structure and Validation of SRS. Introduction to Software Project Planning and list of major issue of project plan Overview Cost Estimation (Uncertainties in Cost Estimation, Building Cost Estimation Models, On Size Estimation, COCOMO model) Project Monitoring Plan (Time sheets, Reviews, Cost-Schedule-Milestone, Earned Value Method, Unit Development Folder, Quality Assurance Plans, Overview of Risk Management
III	System Design Introduction to System Design , Design Principles (Problem Partitioning & Hierarchy, Abstraction, Modularity, Top-Down and Bottom-up strategy Module Level Concepts (Coupling & Cohesion) Introduction: Detailed Design, Module Specification (Specifying Functional Module, Specifying Classes) Verification- Design Walkthrough, Critical Design, review, Consistency checkers
IV	Coding & Testing Introduction: Coding, coding process(Top Down & Bottom Up Approach for coding) , Structured Programming, Information Hiding, Programming Style, Internal Documentation, Verification with code reading. Introduction: Testing, Error, Fault, Failure & Reliability, Testing Process (Top down and bottom up approach for testing) Levels of Testing, Functional Testing v/s Structural Testing (Difference Only)

Basic Text and Reference Books:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Editions
2. Ian Sommerville, Software engineering, Pearson education Asia
3. Pankaj Jalote, Software Engineering – A Precise Approach Wiley
4. Software Engineering Fundamentals by Ali Behhforoz & Frederick Hudson OXFORD
5. Rajib Mall, Fundamentals of software Engineering, Prentice Hall of India.
6. Engineering Software as a Service An Agile Software Approach, Armando Fox and David Patterson
7. John M Nicolas, Project Management for Business, Engineering and Technology, Elsevier

SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar

Programme & Subject : B.Sc. Information Technology

Semester – V

US05CINT25 : Practicals

(Syllabus Effective from June 2020)

Credits : 6

External : 105 Marks

Contact Hrs per Week : 12

Internal : 45 Marks

All units carry equal weightage

University Examination Duration: 6 Hrs

	Description	Weightage
	Practicals	100%

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar
Programme & Subject : B.Sc. Information Technology
Semester – V

US05DINT26 : Software Testing
(Syllabus Effective from June 2020)

Credits : 2

External : 50 Marks

Contact Hrs per Week : 2

University Examination Duration: 2 Hrs

All units carry equal weightage

Unit	Description
I	Software Testing Quality Revolution Software Quality Role of Testing Verification and Validation Failure, Error, Fault, and Defect Notion of software reliability Objectives of Testing Concept of Complete Testing Central Issue in Testing Testing Activities
II	Testing Fundamentals Examining the specification Testing the software with blinders Examining the code
III	Applying your testing skills Configuration testing Compatibility testing Usability testing Testing the documentation
IV	Testing Tools, Test Recording and Reporting Automated testing and test tools Writing and tracking test cases Reporting what you find

Basic Text and Reference Books:

1. Ron Patton “Software Testing”, Techmedia publication, 2000.
2. Kshirasagar Naik and Priyadarshi Tripathy “Software Testing and Quality Assurance” Wiley Publications, Student edition,2013.
3. Dr. K. V. K. K. Prasad ,“Software Testing Tools”, Dreamtech, 2006.
4. Andreas Spillner, Tilo Linz, Hans Schaefer ,“Software Testing Foundations” , Shoff Publishers and Distributors,2nd Edition, 2007.
5. Srinivas D and Gopalswamy R “Software Testing : Principles and Practices”, Pearson Education, 2006.

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar
Programme & Subject : B.Sc. Information Technology
Semester – V
US05DINT27 : Artificial Intelligence
(Syllabus Effective from June 2020)

Credits : 2

External : 50 Marks

Contact Hrs per Week : 2

University Examination Duration: 2 Hrs

All units carry equal weightage

Unit	Description
I	Introduction, Problem Spaces and Search The AI problems, AI technique, The Level of the model, Criteria for success, Some general references, One final word and beyond State space search, Issues in the design of search programs, heuristic search techniques: Generate and Test, Hill Climbing.
II	Knowledge Representation Representations and Mappings, Approaches to knowledge representation, Issues in knowledge representation, The Frame problem , Representing simple facts in Logic, Logic Programming, forward chaining, backward chaining,
III	Knowledge Reasoning Introduction to Non-monotonic reasoning, implementation issues, implementation: Depth first search, Breadth first search, Probability and Bayes Theorem, Certain factors and Rule based systems.
IV	Introduction to PROLOG Facts and predicates, data types, goal finding, backtracking, simple object, compound objects, use of cut and fail predicates, recursion, lists, simple input/output, dynamic database. Uncertain knowledge and reasoning Probabilistic reasoning, Bayesian networks, Fuzzy logic

Basic Text and Reference Books:

1. Artificial Intelligence, Elaine Rich & Kevin Knight, TMH Publication
2. Introduction to Turbo PROLOG, Carl Townsend, BPB Publication
3. Introduction to AI & Expert Systems, Dan W. Patterson, PHI Publication