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PTU/BOS/IT /101/27-03-2007/Batch 2007

PUNJAB TECHNICAL UNIVERSITY
STUDY SCHEME OF B.Tech (IT)

THIRD SEMESTER

Sr. No.	COURSE CODE	COURSE TITLE	HOURS/WEEK			MARKS		
			L	T	P	INT	EXT	TOTAL
1.	CS-201	Computer Architecture	3	1	-	40	60	100
2.	CS-203	Discrete Structures	3	1	-	40	60	100
3.	CS-205	Digital Circuits & Logic Design	3	1	-	40	60	100
4.	CS-207	Data Structures & Programming Methodology	3	1	-	40	60	100
5.	CS-209	Written & Oral Technical Communication	2	1	-	40	60	100
6.	CS-252*	Object Oriented Programming Using C++	3	1	-	40	60	100
7.	CS-213	Software Lab- I (DSPM)	-	-	3	30	20	50
8.	CS-215	Institutional Practical Training	-	-	-	60	40	100
9.	CS-217	Hardware Lab -I (DCLD)	-	-	2	30	20	50
10.	CS-254*	Software Lab-II(OOPS)	-	-	3	30	20	50

FOURTH SEMESTER

Sr. No.	COURSE CODE	Course Title	L	T	P	INT	EXT	TOTAL
1	CS-202	Operating System	3	1	-	40	60	100
2	CS-204	Mathematics – III	3	1	-	40	60	100
3	CS-206	Data Communication	3	1	-	40	60	100
4	CS-208	Microprocessor & Assembly Language Programming	3	1	-	40	60	100
5	CS-210	Systems Programming	3	1	-	40	60	100
6	CS-212	Software Lab - III (OS)	-	-	2	30	20	50
7	CS-214	H/W Lab. II (DC)	-	-	2	30	20	50
8	CS-216	H/W Lab. III (Microprocessor & Assembly Language Programming)	-	-	2	30	20	50
9	CS-218	Software Lab-IV(SP)	-	-	4	30	20	50
		General Fitness				100		100

There should be institutional/industrial training of 6 weeks in summer vacation after 4th semester

***indicates the subject, where changes have been made/New Subject.**

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FIFTH SEMESTER

Sr. No.	COURSE CODE	COURSE TITLE	HOURS/WEEK			MARKS		
			L	T	P	INT	EXT	TOTAL
1.	CS-301	System Analysis and Design	3	1	-	40	60	100
2.	IT-303	Windows Programming	3	1	-	40	60	100
3.	CS-305	Data Base Management System	3	1	-	40	60	100
4.	IT-307	Electronics Commerce	3	1	-	40	60	100
5.	IT-309	Parallel Architecture & Computing	3	1	-	40	60	100
6.	IT-311	Windows programming Lab.	-	-	4	30	20	50
7.	CS-313	DBMS Lab	-	-	4	30	20	50
8.	IT-315	Electronics Commerce Lab	-	-	2	30	20	50
		Industrial Training				60	40	100

SIXTH SEMESTER

Sr. No.	COURSE CODE	COURSE TITLE	HOURS/WEEK			MARKS		
			L	T	P	INT	EXT	TOTAL
1.	IT-302	Advanced Internet Technologies	3	1	-	40	60	100
2.	IT-304	Management Information Systems	3	1	-	40	60	100
3.	IT-324*	Web Administration	3	-	-	40	60	100
4.	IT-326*	Network operating System	3	1	-	40	60	100
5.		Open Elective	3	1	-	40	60	100
6		Elective –I	3	1	-	40	60	100
7	IT-314	MIS Lab.	-	-	2	30	20	50
8.	IT-328*	Web Administration Lab.	-	-	4	30	20	50
9.	IT-330*	Network Operating Systems Lab.	-	-	4	30	20	50
		General Fitness				100		100

Elective-I

IT-312 Expert System
IT-320 Neural Networks
IT-322 Artificial Intelligence & Applications

***indicates the subject, where changes have been made/New Subject.**

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SEVENTH/EIGHTH SEMESTER					
	Course Title		**Internal**	**Ext.Viva**	**TOTAL**
	6-month Industrial Training		500	500	**1000**

SEVENTH/EIGHTH SEMESTER

Sr. No.	**COURSE CODE**	**COURSE TITLE**	**HOURS/WEEK**			**MARKS**		
			L	**T**	**P**	**INT**	**EXT**	**TOTAL**
1.	IT-402	Introduction to Java	3	1	-	40	60	100
2.	IT- 424*	DOT Net Frame Work	3	1	-	40	60	100
3.	CE-216	Environmental Sciences	3	1	-	40	60	100
4.		Elective-II	3	1	-	40	60	100
5.		Elective-III	3	1	-	40	60	100
6.	IT-410	Major Project	-	-	8	100	100	200
7.	IT-412	Introduction to Java Practical	-	-	4	30	20	50
8.	IT- 426	DOT Net Frame Work Lab	-	-	2			
		General Fitness				100		100

Elective-II
IT-406 Multimedia and Applications
IT-414 Data ware Housing and Mining
IT-416 Modeling and Simulation

Elective-III
IT-408 Software Project Management
IT-420 Image Processing & Pattern Recognition&
IT-422 Programming In C#*

***indicates the subject, where changes have been made/New Subject.**

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CS -252 OBJECT ORIENTED PROGRAMMING USING C++

Internal Marks: 40 **L T P**
External Marks: 60 **3 1 0**
Total Marks: 100

1. Basics of C & C++

Introduction, Basics, Data Type, Bit Field integer, Operations, Control Structures, Storage Classes, User Defined Data Type, Reserved Words and Standard 110 Statements in C & C++ .

2. Object Orient Programming With C++

Introduction ,Object Oriented Programming Concept, Objective of OPP, Programming Structure in C++, Data Abstraction

3. Overloading and Information Hiding

Introduction, Function Overloading, Information Hiding

4. Memory Management in C++ :

Introduction ,Constructor-Automatic Initialization of Objects, Dynamic Memory Management , Default Constructor, Copy Constructor, Constructor and Information Hiding, Destructor-Automatic Clear up of an Object

5. Inheritance

Introduction, Inheritance-Data and Code Sharing , Class Derivation ,Ambiguity in Class Member Access ,Virtual Base Class-A Remedy , Class Initialization in Inheritance ,Arguments for the Base Class

6. Bindings and Polymorphism

Introduction, Bindings in C++, Polymorphism

7. Generic Facility

Introduction ,Concept of Generic Facility, Generic Function ,Overloading a Generic Function, Generic Classes

8. File Handling in C++

Introduction , Concept of Stream in C++, File Positioning Functions , Error Handling During File Operation

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CS -254 Lab III (Object Oriented Programming)

Internal Marks: 30	**L T P**
External Marks: 20	**0 0 2**
Total Marks: 50	

List of experiments:

To write following programs in C / C++ :

1. Using basic statements like control statements , looping statements, various I/O statements and various data structures.

2. Creating classes in C++ for understanding of basic OOPS features.

3. Representing concepts of data hiding, function overloading and operator overloading.

4. Using memory management features and various constructors and destructors.

5. Representing Inheritance, virtual classes and polymorphism.

6. Writing generic functions.

7. File handling programs.

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IT-324 WEB ADMINISTRATION

Internal Marks: 40	**L T P**
External Marks: 60	**3 0 0**
Total Marks: 100	

PREREQUISITES:- E-Commerce.
OBJECTIVES:- The course provides the knowledge in designing the web pages using different packages.
COURSE CONTENTS
HTML :- Formatting text, hyperlinks and color in web pages creating tables and frames. Working with images, maps and forms.
Scripting Languages :- JavaScript- Using Operators, statements, function, handling events and working with objects. Creating frames, Processing forms, using hidden fields and cookies. Working with links and images.
Active Server Pages (ASP) :- ASP basic architecture, Request Object, response Object, application Object, Session Object, Server Object Database Access in ASP.
PHP: Basics of server-side scripting, conventions in PHP, passing information through a form and links, user interaction: PHP with forms and cookies, files, strings & mail, database access in PHP.

RERFERNCES:-

Active Server pages 3 Developers Guide- Alberto Manuel Ricart, Stephen Asbury, DIG Books India.
HTML 4 By QUE
Teach Yourself HTML 4 With XML, DHTML and Java Script - Stephine Cottrell Bryant
Essential PHP for web professionals by crystopher cosentino, pearson education India

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IT-326 NETWORK OPERATING SYSTEM

Internal: 40 **L T P**
External: 60 **3 1 0**
Total: 100

Prerequisites : Computer Network-I

Objectives: The course provides the sufficient knowledge about the theoretical and practical aspects of Networks and their applications.

Course Contents

Introduction

The GNU – Linux Connection, the heritage of Linux; UNIX, What is so good about Linux ? Overview of Linux, Additional features of Linux.

The Linux Operating System

Getting started, logging in, working with the shell, Curbing Your Power: Superuser Access, Getting the Facts: Where to find documentation.

Command Line Utilities

Special Characters, Basic Utilities, Working with files, (Pipe): Communicates between process, Compressing and Archiving Files, Locating Commands, Obtaining user and system information, Communicating with other users, email.

The Linux FileSystem

The Hierarchical File system, directory and ordinary files, working with Directories, Access Permissions.

The Shell

Command line, standard input and standard output, running a program in the background, Filename Generation / Pathname Expansion

The Editors

The vim Editor, History, creating and editing a file with vim, The compatible parameter, vim features, command mode: Moving the cursor, Input mode, command mode: Deleting and changing text, searching and substituting, yank put and delete commands, reading and writing files, setting parameters, advanced editing techniques, units of measure.

The Emacs Editor: history, getting started with Emacs, Basic editing commands, advanced editing, language – sensitive editing, customizing emacs.

The Shells

The Bourne Shell: Background, Shell Basics, Parameters and variables, process, History, Aliases, Functions, Controlling Bash Features and Option, Processing the command line.

The TC Shell: Shell SCRIPT, Entering and leaving the TC Shell, Features common to the Bourne again and TC Shells, Redirecting standard Error, Working with the Command line, Variables, Control Structures.

Programming Tools

Programming in C, Using Shared Libraries, Make: Keeps a set of Programs current, Debugging C Programs, threads, System Calls, Source Code Management, Control Structure, File Descriptors, Parameters and Variables, Expressions, Shell Programs.

References:

1. “A Practical Guide to Linux” by Sobell, Pearson Publishers, India
2. “Linux Programming by Example: The fundamentals” by Robbins, Pearson Publishers, India
3. “Linux + Certification Guide” by Drew and Mike Harwood, Tata Mc-Graw Hill Publishers, India

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IT-328 WEB ADMINISTRATION Lab

Internal Marks: 30 **L T P**
External Marks: 20 **0 0 4**
Total Marks: 50

Students are required to write code snippets, which covers the following objectives 1. Design Simple Web Pages using standard HTML tags like, HEAD, TITLE, BODY

2. Design HTML web pages, which make use of INPUT, META, SCRIPT, FORM, APPLET, BGSOUND, MAP
3. Working with various attributes of standard HTML elements
4. Using Java Script's Window and document objects and their properties and various methods like alert (), evaI (), Parselnt () etc. methods to give the dynamic functionality to HTML web pages
5. Writing Java Script snippet which make use of Java Script's inbulit as well as user defined objects like navigator, Date Array, Event, Number etc.
6. Write code which does the form validation in various INPUT elements like TextFiled, Text Area, Password, Selection list etc.
7. Writing Server side programs for web pages using ASP's Request, Response, and Application objects.
8. Writing ASP programs which make usage of Session, Server Objects
9. Using Database Access in ASP
10. Create a web page using PHP.
11. Usage of Internal DTD, External DTD, Entity Declaration.

IT-330 NETWORK OPERATING SYSTEM Lab

Internal Marks: 30 **L T P**
External Marks: 20 **0 0 4**
Total Marks: 50

1. Unix basic Commands.
2. Shell Programming
3. Working with the shell.

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IT-422 Programming in C#

Internal:	**40**	**L T P**
External:	**60**	**3 1 0**
Total:	**100**	

Introducing C#: Evolution of C#, Characteristics of C#, Applications of C#, difference between C# and C++ , C# and Java.

Overview of C#: A simple C# program, namespaces, adding comments, main returning a value using aliases for namespace classes, passing String objects ·to WriteLine-method, command line arguments, main with a class, providing interactive input using mathematical functions, Multiple Main Methods, compile time errors, program structure, program coding style.

Literals, Variables and Data Types: Literals, variables, data types, value types, reference types, declaration of variables, initialization of variables, default values, constant variables, scope of variables, boxing and unboxing

Operators and Expressions: Arithmetic operators, relational operators, logical operators, assignment operators, increment and decrement operators, conditional operator, bitwise operators. Special operators, arithmetic expressions, evaluation of expressions, precedence of arithmetic operators, type conversions, operator precedence and associativity, mathematical functions

Decision Making and Branching: Decision making with if statement, the if-else statement, nesting of if-else statements, the else if ladder, the switch statement, the? : operator

Decision Making and Looping: The while statement, the do statement, the for statement. the for each statement, Jumps in loops .

Methods in C# : Declaring methods, the main method, invoking methods, nesting of methods, method parameters, pass by value, pass by reference, the output parameters, variable argument lists, methods overloading

Handling Arrays: One-dimensional arrays, creating an array, two-dimensional arrays, variable-size arrays, the System.Array class, ArrayList class

Manipulating Strings: Creating strings, string methods, inserting strings using system, comparing strings, finding substrings, mutable strings, arrays of strings, regular expressions

Structure and Enumerations: Structures, structs with methods, nested structs, differences between classes and structs, enumerations, enumerator initialization, enumerator base types, enumerator type conversion

Classes and Objects: Basic principles of OOP. defining a class, adding variables, adding methods. member access modifiers, creating objects, accessing class members, constructors, overloaded constructors, static members, static constructors, private constructors, copy constructors, destructors, member initialization, the this reference, nesting of classes, constant members, read only members, properties, indexers

Inheritance and Polymorphism: Classical inheritance, containment inheritance, defining a subclass, visibility control, defining subclass constructors, multilevel inheritance. hierarchical inheritance, overriding

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methods, hiding methods, abstract classes. abstract methods. sealed classes, sealed methods, polymorphism.

Interfaces: Multiple Inheritance: Defining an interface, extending an interface, implementing interfaces. interfaces and inheritance, explicit interface implementation, abstract class and interfaces

Operator Overloading: Overloadable operators, need for operator overloading, defining operator overloading, overloading unary operators, overloading binary operators, overloading comparison operators

Delegates and Events: Delegates, delegate declaration, delegate methods, delegate instantiation, delegate invocation, using delegates, multicast delegates, events.

Managing Console I/O Operations: Console class, console input, console output, formatted output, numeric formatting, standard numeric format, custom numeric format.

Managing Errors 'and Exceptions: Types of errors, exceptions, syntax of exception handling code. multiple catch statements, the exception hierarchy, general catch handler, using finally statement, nested try blocks, throwing our own exceptions, checked and unchecked operators, using exceptions for debugging

References:

Programming in C#, E Balagurusamy Tata McGraw-Hill Publishing Company Ltd.

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IT -424 DOT Net Frame Work

Internal: 40 **L T P**
External: 60 **3 1 0**
Total: 100

Framework Fundamentals

Using Value Types:-Built-in Type0s, Declaring Value Types, Creating User-Defined Types, Creating Enumerations. Using Common Reference Type: Reference Type, Comparing the behavior of Reference and value Types, Built-in Reference Types, String and String Builders, Creating and Sorting Arrays, using Streams, Throw and Catch Exceptions.

Constructing Classes: Inheritance, Interface, Partial Classes, Generics, Events, Attributes, Type Forwarding .

Converting Between Types: Boxing and Unboxing, Conversation in Custom Types.

Input / Output(I/0)

Navigating File system:-File System Classes, FileSystemlnfo Class, Filelnfo Class, Getting Infomation about a File, Copying a File, Directorylnfo Class, Enumerating Files in a Directory, Drivelnfo Class, DriveType Enumeration, Enumerating Drives, Path Class, Changing a File Extension in a Path, Fi/eSystemWatcher Class, Monitoring Directory for Changes.

Reading and Writing files:-Streams, File Class, Directory Class, FileAccess Enumeration, i'ileMode Enumeration, FileStream Class, StreamReader Class, Reading from a File, StreamWriter Class, Writing to a File, Readers and Writers, MemoryStream Class,. Using a memoryStream. BufferedStream Class, Using Buffered Stream

Compressing streams:-Compression Streams, GZipStream Class, DeflateStream Class, compressing Data within a Compression Stream, Decompressing Data within a Compression Stream

Working with isolated storage:- Isolated Storage, IsolatedStorageFile Class, Creating a Store, isolatedStorageFileStream Class. Reading and Writing Data to Isolated Storage, Using directories in Isolated Storage, IsolatedStorageFilePermission Class, Permitting Isolated Storage.

Searching, modifying and encoding Text

Forming regular expressions:-Using Regular Expressions for Pattern Matching, Extracting Matched Data, Replacing Substrings using Regular Expressions, Using Regular Expressions to Constrain String Input.

Encoding and decoding:-Encoding Class, Examining Code pages, Specifying Encoding types when reading a file.

Collections and Generics

Collecting Data items:-Types of Collections, Adding and removing items, Iterating over items, Consistent interfaces in collections, Sorting Items

Working with sequential lists:-Sequential Lists, Queue Class, Stack Class

Working with dictionaries:- Dictionary, Equality, lEqualtiyComparer Interface, SortedList Class, Specialized Dictionaries.

Using specialized collections:- Working with bits, collecting strings, the NameValueCollection class.

Generic collections:- Generics work, improving safety and performance, generic collection class structure

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Graphics

Drawing graphics:- the System.Drawing namespace, location and size of controls, color of controls, draw lines and shapes, customize pens, fill shapes.

Working with images:- Image and Bitrnap classes, display pictures, create and save pictures, use of icons.

Formatting text:- Add text to graphics, create a Font object, write text, controlling formatting of text.

Threading

Creating threads:- Simple threads, passing data to threads, stopping threads, execution context

Sharing data: Avoiding collision, synchronizations locks

Asynchronous programming model:- understanding asynchronous programming, ThreadPool, timer objects .

Application Domains and Services

Application domains:- AppDomain class, creating application domain, loading assemblies in application domain, unload an application domain.

Configuring application domains:- Using an application domain to launch assemblies with limited privileges, Configuring application domain properties.

Creating windows services:-Creating a service project, implementing a service, create and install a project for a service, manage and control a service

References:-

1 .. NET Framework 2.0 Application Development Foundation by Tony Northup and Shawn Wildermuth, with Bill Ryan of GrandMasters, PHI

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IT-426 DOT Net Frame Work Lab

Internal Marks: 30 **L T P**
External Marks: 20 **0 0 2**
Total Marks: 50

1. Building Windows presentations foundations applications.
2. Develop a basic WPS applications.
3. Use a navigation Window & page function to create a Wizard.
4. Learn how property bags are used.
5. Data bind to collections objects.
6. Develop rock solid web portal applications.