Program Syllabus Booklet

Post Graduate Diploma in Computer Application
(PGDCA-304)

Session: 2017-18

University College of Computer Applications
Guru Kashi University, Talwandi Sabo

TABLE OF CONTENTS

| S No.	Content	Page No
1	Introduction about Program	3
2	Curriculum / Scheme - Annexure-2	4-5
3	Semester wise Syllabi - Annexure-3	6-21
4	Academic Instructions - Annexure-4	22

Introduction about Program

Post Graduate Diploma in Computer Applications (PGDCA) is designed for graduate students who are interested in computer applications. This course has been made for students who want to learn computer applications in different fields like banking, insurance and accounting. This program allows students to seek professional knowledge in computer applications. Post Graduate Diploma in Computer Applications (PGDCA) is designed for graduate students who are interested in computer applications. This course has been made for students who want to learn computer applications in different fields like banking, insurance, and accounting. This program allows students to seek professional knowledge in computer applications. This program provides specialization in computer science with technical, professional, and communications skills. It also trains students to become future IT professionals.

This program will give you a sound understanding of basic computer applications in business covering key programming languages, database management, systems analysis, computer software development in specific applications such as studies, financial management, and long-range planning. Such knowledge will help candidates to find employment in public and private sectors, insurance, banking, accounting, e-commerce, marketing, and lots more.

Sr	Subject Code	Subject Name	Type of Subject T/P	L	T	P	No. of Credits	Internal Marks	External Marks	Total Marks
				(Hours Per Week)						
1	A304101	Programming Using C	T	3	1	0	4	50	50	100
2	A304102	Fundamentals of Computers & Information Technologies	T	3	1	0	4	50	50	100
3	A304103	Computer Organization & Architecture	T	3	1	0	4	50	50	100
4	A304104	Data Communication	T	3	1	0	4	50	50	100
5	A304105	Operating Systems	T	3	1	0	4	50	50	100
6	A304106	S/w Lab-I(Fundamentals of Computers & Information Technologies)	P	0	0	4	2	60	40	100
7	A304107	S/w Lab-II(C programming)	P	0	0	6	3	60	40	100
Total No. of Credits							25			

Semester: 1st

4

				(Hours Per Week)						
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**L**	**T**	**P**	**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**

					(Hours Per Week)					
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**L**	**T**	**P**	**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
1	A304201	Data Structures	T	3	1	0	4	50	50	100
2	A304202	Digital Electronics	T	3	1	0	4	50	50	100
3	A304203	Database Management Systems	T	3	1	0	4	50	50	100
4	A304204	Internet Concepts and Web Designing	T	3	1	0	4	50	50	100
5	A304205	S/w Lab-III(Data Structures using C/C++)	P	0	0	8	4	60	40	100
6	A304206	S/w Lab-IV(Database Management Systems)	P	0	0	4	2	60	40	100
7	A304207	S/w Lab-V(Internet Concepts and Web Designing)	P	0	0	6	3	60	40	100
Total No. of Credits							25			
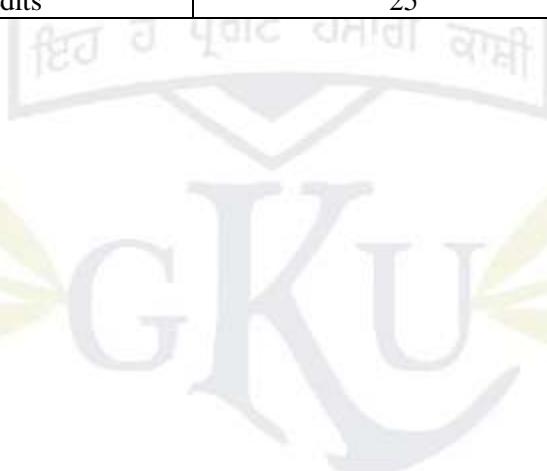
Semester: 2nd

Course Name: Programming Using C

Course Code: A304101

Semester: 1st

L T P

Credits: 04   **3 1 0**

Course Contents

SECTION -A

Introduction: ANSI C standard, Overview of Compiler and Interpreters, Structure of C Program, Programming rules, Execution

Basic structure of C program: Character set, Identifiers and keywords, constants, variable, Data types, input and output, type conversion,

Operators and expressions: Arithmetic, Unary, Logical and Relational operators, assignment operators, Conditional operators, type conversion. Library functions.

Input/ Output in C: Formatting input & output functions.

Decision making statements – if, else if

Control statements: branching, looping using For, While and Do-While statements, nested control structures, switch, break and continue statements.

SECTION-B

Arrays: Definition, declaration, assignment, one dimensional and two dimensional arrays.

Strings: input/output of strings, string handling functions, table of strings.

Pointers: pointer data type, pointer declaration, initialization, accessing values using pointers.

Functions: prototype, definition and call, formal and actual arguments, methods of parameter passing to functions, recursion versus iteration.

Structures and unions: using structures and unions, comparison of structure with arrays and union.

Files: opening and closing files, Basic I/O operation on files.

Storage Classes: automatic, external, static and register variables.

Text Books:

1. Kanetkar Yashvant. *Let us C*, Seventh Edition, BPB Publications, and New Delhi.
2. Balagurusamy E. *Programming in C*, Tata McGraw Hill.
3. Gottfried Byron S.*Programming in C*, Second Edition, McGraw Hills.
4. Kernighan & Richie. *The C Programming Language*, Second Edition, PHI Publication
5. Salaria R. S. *Problem Solving and Programming in C*, Second Edition

The mapping of PO/PSO/CO attainment is as follows:

Course Name: Fundamentals of Computer& Information Technologies

Course Code: A304102

Semester: 1st

L T P

Credits: 04

3 1 0

Course Contents

SECTION - A

Information concepts and processing: Evolution of information processing, data, information language and communication.

Elements of computer processing system: Hardware-CPU, storage devices and media. VDU, input-output devices, data communication equipment, Software-system software, application software.

Programming Language: classification, machine code, assembly language, higher level languages, and fourth generation languages.

Introduction to Operating System: its need and Operating System services; Operating System classification- single user, multi-user, simple batch processing, Multiprogramming, Multitasking, Parallel system, Distributed system, Real time system. Typical commands of DOS, GUI - Windows.

SECTION – B

Computers and Communication: Single user, multi-user, work station, client server systems, Computer networks, network protocols, LAN, MAN, WAN.

Introducing the Internet: Description of the Internet–Working, Surfing, Internet Domain Names and Addresses

Connecting LAN to Internet: Protocols, IP Address and Web Server.

Internet Applications : Email , Working of email , Advantages of email, Understanding of Internet Email, Net news ,Search Engines, Introducing to Usenet ,organization of Usenet articles, reading, saving ,mailing, writing and posting of an articles.

WWW- World Wide Web

Working of WWW, Hypertext and Hypermedia, URL, Searching the WWW, Web access using web browser, locating information on the Web.

Text Books:

1. Sinha P.K. *Computer Fundamentals*

2. Rajaraman V. *Fundamentals of Computers*, Prentice Hal

The mapping of PO/PSO/CO attainment is as follows:

Course Name: Computer Organization & Architecture

Course Code: A304103

Semester: 1st

L T P

Credits: 04   **3 1 0**

Course Contents

SECTION-A

Boolean Algebra: Boolean operations, Truth Tables, Boolean Laws, K-maps (2,3 and 4 variable maps, don't care conditions).

Basic Gates, Combinational logic design: half-adder, full adder, parallel adder.

Sequential circuits: concept, flip-flops (D, RS, JK, T), counters (Ripple, Asynchronous, Synchronous).Instruction codes, Instruction formats, Instruction cycle, addressing modes.

SECTION -B

Register Transfer Language, Arithmetic, Logic and Shift micro-operations, Arithmetic Logic Shift unit

Control Memory: Design of control unit, Micro programmed and hardwired control unit (overview only), Features of RISC and CISC

Memory Organization: memory hierarchy, Memory types: cache, associative and other types. I/O organization: I/O interface, Modes of data transfer: Programmed I/O, Interrupt initiated I/O, DMA.

Block diagram depicting architecture of 8085 machine.

Text Books:

1. M.M. Mano**,** (2002). *Computer System Architecture***.** Third Edition, Prentice-Hall of India.
2. A.S.Tannenbaum,(1999). *Structured Computer Organization***.** Prentice-Hall of India.
3. William Stallings, (2002). *Computer Organization and Architecture*. 6th
Edition, Pearson Education.

GURU KASHI UNIVERSITY
PUNJAB - INDIA

Course Name: Data Communication

Course Code: A304104

Semester: 1st

L T P

Credits: 04   **3 1 0**

Course Contents

SECTION -A

Introduction to Data Communication, Analog vs Digital Communication; Fourier Analysis, Band Width Limitation, Data rate of a channel, Error Detection and Correction: Nature of errors, Parity Check, CRC, Hamming Code, Modulation techniques :AM, PM, FM, Synchronous and Asynchronous Modulation, Multiplexing : SDM, FDM, TDM, STDM.

SECTION - B

Introduction to Computer networks and applications; Network structure and Architecture, OSI reference model, Network standardization,

Physical Layer: Circuit switching, Packet Switching, Message Switching, Terminal Handling, Telephone system, modems, congestion, Multi channel Access, Transmission media.

The Data Link Layer : Design Issues, Elementary Data Link Protocols, Sliding Windows Protocol, Protocol performance, Protocol Specification & verification, DLL in X.25, HDLC/SDLC.

The Network Layer: Design Issues, Routing Algorithms, Congestion Control Algorithms, Internet working, Example of Network layer in ARPANET, X.25 Protocol.

Application Layer

Text Books:

1. Tanenbaum Andrew S.(2000).*Computer Networks*, 3rd Edition, Pearson Prentice Ltd.
2. Behruoz A Forouzan.(2009). *Data Communication and Networking*, 4th Edition, Tata McGraw Hill.
3. Larry L.Peterson.(2008) *Computer Networks,* A System Approach, 4th Edition, Elsevier Publication.

Course Name: Operating Systems

Course Code: A304105

Semester: 1st

L T P

Credits: 04   **3 1 0**

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

Course Contents

SECTION-A

Introduction: Operating System, Role as resource manager, Operating system strategies, Factors in operating system design, operating system functions and services.

Process Management: The system view of processes, Process descriptor, Process state diagram, Resource abstraction, Process hierarchy, Process scheduling strategies, Process synchronization, Deadlock handling

SECTION-B

Memory Management: Factors in memory design, Memory hierarchies, Memory manager strategy, Memory allocation strategies, Paging, Demand paging and Segmentation techniques

Device Management: Device management approaches, Device allocation considerations, Disk scheduling.

Information Management: File system, its layered structure and general model, Allocation methods, free space management.

Text Books/References:

1. Silberschatz Galvin. *Operating System concepts*

2. Milan Milenkovic. *Operating System*

3. Deital H.M. *An Introduction to Operating System* (Addison Wesley)

Course Name: S/W Lab-I (Fundamentals of Computer & Information Technology)

Course Code: A304106

Semester: 1st

L T P

Credits: 02   **0 0 4**

Course Contents

1) [MS-WORD] Creating, opening, closing, saving and editing a word Document.
2) [MS-WORD] Insert header and footer in the document.
3) [MS-WORD] Create a link between two files using Hyperlink.
4) [MS-WORD] Create a mail-merge and add data of 5 recipients.
5) [MS-WORD] Protect a document.
6) [MS-WORD] Implement macro.
7) [MS-POWERPOINT] Create duplicate slides in PowerPoint. Give an example.
8) [MS-POWERPOINT] Make a master slide.
9) [MS-POWERPOINT] Design a chart of population.
10) [MS-POWERPOINT] Insert Animation.
11) [MS-POWERPOINT] Insert a background in PowerPoint.
12) [MS-EXCEL] How you can filter your data.
13) [MS-EXCEL] Sort data in ascending and descending order.
14) [MS-EXCEL] To show the use of goal seek
15) [MS-EXCEL] To show the use of scenarios.
16) [MS-EXCEL] Perform any 5 Date and Time functions.
17) [MS-EXCEL] Perform any 5 Math & Trig functions.

Course Name: S/W Lab-II(C Programming)

Course Code: A304107

Semester: 1ˢᵗ

L T P

Credits: 03   **0 0 6**

Course Contents

1. Program to find sum of two numbers.

2. Program to test whether an entered number is even, odd or zero.

3. Program to test whether an entered number is prime number or not.

4. Program to print N terms of a Fibonacci Series.

5. Program to find the reverse of number.

6. Program to check whether a given Number or a given string is palindrome or not.

7. Program to reverse a given string.

8. Program to check whether a given number is prime or not.

9. Program to find the prime numbers up to N.

10. Program to print:

    *

    **

    ***

    ****

    *****

11. Program to search a string in an array using read-data.

12. Program to find the frequency of vowels in a given string.

13. Program to find the frequency of each character in a given string.

14. Program to find greatest in a matrix using subroutine.

15. Program for Matrices Addition. And subtraction.

16. Program for Matrix Transpose.

17. Program to find sum of rows and column of a matrix.

18. Program to find sum of both diagonals of the matrix.

Course Name: Data Structures

Course Code: A304201

Semester: 2nd

L T P

Credits: 04   **3 1 0**

Course Contents

SECTION-A

Basic concept and notations: Data structures and data structures operations, mathematical notation and functions, algorithmic complexity, Big 'O' notations and time space trade off.

Arrays: Linear array, representation of linear array in memory, Traversing linear array, insertion and deletion in an array, multi-dimensional array: row-major, column major order, sparse array.

Stacks: Push and Pop in stack. Representation of stack in memory (linked and sequential) applications of Stack: conversion from infix notation to post fix notations, evolution of postfix notation, matching of Parenthesis, recursion, Tower of Hanoi.

Queue: Queues and Dequeues, Priority Queues, Operations on queues.

SECTION-B

Linked list: Representation of linked list using static and dynamic data structures, Comparison of Linear and non-linear data structures, Insertion and deletion of a node from a linear linked list, Introduction to doubly and circular linked lists, Application of linked lists.

Searching and Sorting: Linear and binary search, Bubble Sort, Insertion Sort, Selection Sort, Merge Sort, Radix Sort and Quick Sort comparison of various searching and sorting algorithms.

References:

1. Schaum Series. *Data Structure.*

2**.** Niclaus Wirth. *Algorithm and Data Structures & Programs.*

3. Tanenbaum.*Data Structures.*

4**.** Trembley & Soreson. *An Introduction to Data Structures Applications*

Course Name: Digital Electronics

Course Code: A304202

Semester: 2nd

L T P

Credits: 04   **3 1 0**

Course Contents

SECTION-A

Information Representation: Number systems, Integer and floating point representation, character codes (ASCII, EBCDIC).

Digital IC's: Logic gates, flip-flops, clocks and timers, shift registers, counters.

Boolean Algebra & Circuit Design: Basic laws of Boolean algebra, circuit design using standard (NAND) gates, Adder, coder / De-multiplexer, encoder / multiplexer design.

SECTION-B

MOS & LSI Digital Systems: Semiconductor memory, static and dynamic devices, read only &random access memory chips, PROMS and EPROMS. Address selection logic. Read and write control timing diagrams for memory ICs.

Logical Families: TTL, STTL, CMOS logic families.

Digital Peripherals: Keyboard, multiplexed seven segment display, CRT display schemes, Printers, Control interfaces (parallel and serial) for the peripheral units.

References:

1. D. Morris Mano.*Digital Circuits of logic design* (PHI).
2. 2.T.C. Bartee.*Digital and electronic circuits* (McGraw Hill).
3. Malvino.*Digital computer electronics.*
4. Floyd, *Digital fundamentals.*
5. R.P. Jain , *Modern digital electronics.*
6. Tauls and Schillings, *Digital integrated electronics.*

Course Name: Database Management System

Course Code: A304203

Semester: 2nd

L T P

Credits: 04   3 1 0

Course Contents

SECTION-A

Traditional file processing system: Characteristics, limitations, Database: Definition, composition.

Database Management System: Definition, Characteristics, advantages over traditional file processing system, User of database, DBA and its responsibilities, Database schema, instance.

DBMS architecture, data independence, mapping between different levels.

Database languages: DDL, DML, DCL.

Database utilities, Data Models, Keys: Super, candidate, primary, foreign.

SECTION-B

Entity relationship model: concepts, mapping cardinalities, entity relationship diagram, weak entity sets, strong entity set, aggregation, generalization, Overview of Network and Hierarchical model.

Relational Data Model: concepts, constraints. Relational algebra: Basic operations, additional operations.

Database Design: Functional dependency, decomposition, problems arising out of bad database design, Normalization- Normal forms based on primary keys (1 NF, 2 NF, 3 NF, & BCNF), multi-valued dependency, Database design process, data base protection, database integrity.

Database concurrency: Definition and problems arising out of concurrency.

References:

1. C.J. Date .*An Introduction to Data Base Systems*, Narosa Publications.

2. Henry F. Korth. *Database System Concepts,* McGraw Hill.

3. Naveen Prakash. *Introduction to Database Management*, TMH.

4. Bipin C. Desai. *An Introduction to Database System*, Galgotia Publications.

5. Ullman.*Principles of Database Systems*, Golgotha Publications

Course Name: Internet Concepts and Web Designing

Course Code: A304204

Semester: 2ⁿᵈ

L T P

Credits: 04　　　　　　　　　　　　　　　　　　　　　　　　　　　　**3 1 0**

Course Contents

SECTION -A

Introduction The World Wide Web (WWW) , History, Hypertext and Hypertext Markup Language, Microsoft Front Page, HTML Documents, various Tags.

Elements of an HTML Document: Text Elements, Tag Elements, Special Character elements Structural elements of HTML documents: Header tags, Body tags, Paragraphs, Titles, Numbered list, Non Numbered lists, and Definition lists.

Formatting HTML Documents: Logical styles (source code, text enhancements, variables), Physical Styles (Bold, Italic, underlined, crossed).

Managing images in Html: Image format (quality, size, type), Importing images (scanners), Tags used to insert images, Frames.

Tables in HTML documents Hypertext and Link in HTML Documents, URL/FTP/HTTP

Types of links: Internal Links, External Links, Link Tags, Links with images and buttons, Links that send email messages

Special effects in HTML documents: Text fonts, Sensitive Images, Tip tables, Page background (Variable, Fixed), Rotating messages (Marquee)

Managing forms: Interactive forms, creating data entry forms

SECTION –B

Cascading Style Sheets: ways of inserting a style sheet:
- External style sheet
- Internal style sheet
- Inline style

CSS Id and Class, Inheritance in CSS

Scripting and websites: Java scripting

PHP: This course is an introduction to the PHP programming language. Topics include installation and configuration with the Apache http server, variables and data types, language syntax, control structures, functions, strategies and tools for handling input and generating output, error handling, sending email, manipulating dates and times, string manipulation and regular expressions, SQL and MySQL database access, object oriented programming (OOP),.Though primarily focused on PHP 5.X. We will emphasize security and sound coding practices throughout.

References:

1.Mark Surfas, Mark Brown and John Juge.*Special Edition Using Intranet HTML*

2.JefDouyer – Hayden development group. *Dynamic HTML Web Magic*

3.Elizabeth Castro. *HTML 4 for the World Wide Web*

Course Name: S/W Lab-III (Data Structure Using C/ C++)

Course Code: A304205

Semester: 2ⁿᵈ

L T P

Credits: 04   **0 0 8**

Course Contents

1. Write a program to insert an element into an array
2. Write a program to delete an element from an array.
3. Write a program to implement linear search algorithm
4. Write a program to implement binary search algorithm
5. Write a program to implement bubble sort algorithm.
6. Write a program to implement selection sort algorithm.
7. Write a program to implement PUSH operation in stacks.
8. Write a program to implement POP operation in stacks.
9. Write a program to implement Queues.
10. Write a program to insert an element in the beginning of the link list.
11. Write a program to insert an element in the middle of the link list.
12. Write a program to insert an element in the end of the link list.
13. Write a program to delete an element from the beginning of the link list.
14. Write a program to delete an element from the end of the link list.
15. Write a program for implementation of a graph.
16. Write a program for implementation of binary search tree.

Course Name: S/W Lab-IV (Database Management System)

Course Code: A304206

Semester: 2nd

L T P

Credits: 02   **0 0 4**

Course Contents

- Data Definition, Table Creation, Constraints,
- Insert, Select Commands, Update and Delete Commands.
- Nested Queries and Join Queries
- Views
- High level programming language extensions (Control structures, Procedures and Functions).
- Front end Tools
- Forms
- Triggers
- Menu Design
- Reports.
- Database Design and implementation (Mini Project).

.

Course Name: S/W Lab-V (Internet Concepts and Web Designing)

Course Code: A304207

Semester: 2nd

L T P

Credits: 03   **0 0 6**

Course Contents

1. Design the page with an attractive background color, text color and background image.

2. Design the page with an attractive color combination, with suitable headings and horizontal rules.

3. Write an HTML document with an example of Ordered List and Unordered List.

4. Write an HTML document with an example of Table format to print your Bio-Data.

5. Write an HTML document with an example of Table format to print your Telephone Bill.

6. Develop a complete web page using Frames and Frameset.

7. Write an HTML code for designing the subscription form of mail account in the e-mail website with appropriate fields.

8. Write an example of Style Sheet.

9. Design a webpage with colors in bicolor, text and link, try out different sizes.

10. Design a single page web site for a university containing a description of the courses offered, it should also contain some general information about the university such as its history.

11. Write a HTML code for specifying the heading BS or cities in the HTML document.

12. Write a HTML Code for Nested list.

13. Write HTML code to develop a web page having background in blue and title "Welcome to my home page" in red other color.

14. Create an HTML document of giving details of your name, age, telephone no, address and enrolment no, aligned in proper order.

15. Design a web page that provides links to five different web pages or to entirely different websites.

Total Number of Course	14
Number of Theory Course	9
Number of Practical Course	5
Total Number of Credits	50
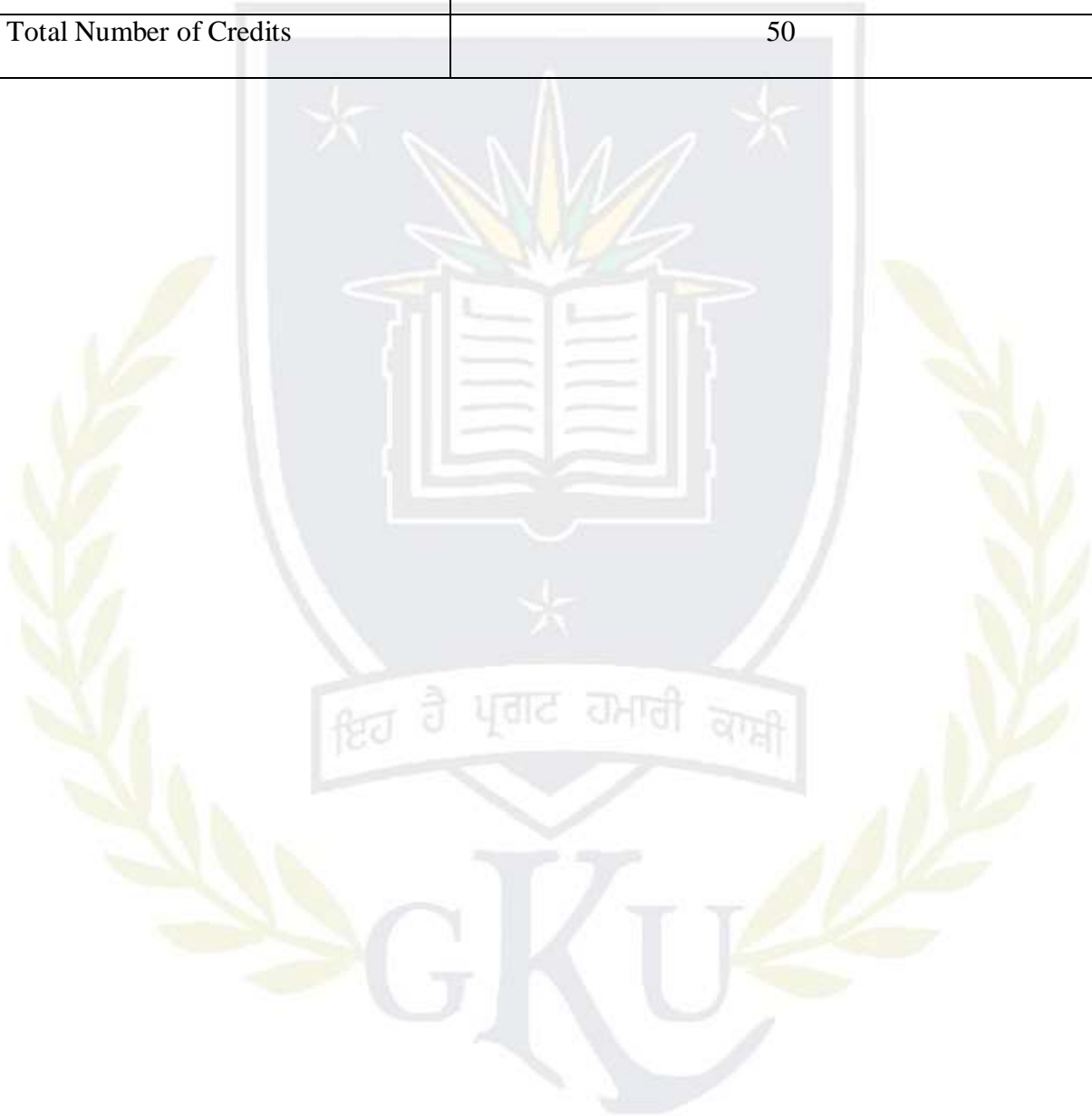
ACADEMIC INSTURCTIONS

Attendance Requirements

A student shall have to attend 75% of the scheduled periods in each course in a semester; otherwise he / she shall not be allowed to appear in that course in the University examination and shall be detained in the course(s). The University may condone attendance shortage in special circumstances (as specified by the Guru Kashi University authorities). A student detained in the course(s) would be allowed to appear in the subsequent university examination(s) only on having completed the attendance in the program, when the program is offered in a regular semester(s) or otherwise as per the rules.

Assessment of a course

Each course shall be assessed out of 100 marks. The distribution of these 100 marks is given in subsequent sub sections (as applicable).

Components	Internal (50)						External (50)	Total
	Attendance	Assignment			MST1	MST2	ETE	
		A1	A2	A3				
Weight age	10	10	10	10	30	30	50	
Average Weight age	10	10			30		50	100

Passing Criteria

The students have to pass both in internal and external examinations. The minimum passing marks to clear in examination is 40% of the total marks.