

Scheme & Syllabus of

B.Sc. (Graphics and Web Designing)

Batch 2019 onwards



By

Board of Study Computer Applications

Department of Academics

IK Gujral Punjab Technical University

**I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)**

B.Sc. in Graphics and Web Designing:

It is an Under Graduate (UG) Program of 3 years duration (6 semesters)

Eligibility:

All those candidates who have passed the 10+2 or its equivalent examination in any stream conducted by a recognized Board / University / Council.

OR

Those candidates who have passed their Matriculation examination AND have also passed three year Diploma in any Trade from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such Examination from any other recognized State Board of Technical Education, or Sant Longowal Institute of Engineering & Technology, Longowal.

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Programme Educational Objectives:

PEO 1: To impart core theoretical and practical knowledge of Graphics and Web Designing for leading successful career in industries, pursuing higher studies or entrepreneurial endeavours.

PEO 2: To develop the ability to critically think, analyze, design and develop Graphics and Web based solutions.

PEO 3: To imbibe the life-long learning and understanding of ethical values, their duties toward environmental issues and sensitize them toward their social responsibility as Graphics Designer and Web Developer.

Programme Outcomes:

PO1: Graphics knowledge: Apply the knowledge of mathematics, science and IT to the complex graphics design.

PO2: Problem analysis: Identify, formulate, research literature, and analyze complex problems reaching substantiated conclusions using principles of mathematics, natural sciences, and IT.

PO3: Design/development of solutions: Develop solutions for complex graphics and web designing problems that meet the specified needs with appropriate consideration for the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and methods including analysis and interpretation of data that can explore different approaches in computer graphics and web development.

PO5: Modern tool usage: Create, select, and apply various aspects of interactive websites, motion graphics, video and informational graphics with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional practice.

PO7: Environment and sustainability: Understand the impact of the graphics and website development in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the professional practice.

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PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex graphics and web design activities with the professional community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the development and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO 1: Able to acquire practical competency with emerging technologies and skills needed for becoming an effective graphics and web designer.

PSO 2: Able to assess hardware and software aspects necessary to develop Graphics and Web Designing.

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First Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1901	Core Theory	Mathematics	3	1	0	40	60	100	4
UGCA1902	Core Theory	Fundamentals of Computer and IT	3	1	0	40	60	100	4
UGWD1901	Core Theory	Introduction to Scripting Languages	3	1	0	40	60	100	4
UGCA1904	Practical/Laboratory	Workshop on Desktop Publishing	0	0	4	60	40	100	2
UGWD1902	Core Practical/Laboratory	Introduction to Scripting Languages Laboratory	0	0	4	60	40	100	2
UGCA1906	Core Practical/Laboratory	Fundamentals of Computer and IT Laboratory	0	0	4	60	40	100	2
BTHU103/18	Ability Enhancement Compulsory Course (AECC)-I	English	1	0	0	40	60	100	1
BTHU104/18	Ability Enhancement Compulsory Course (AECC)	English Practical/Laboratory	0	0	2	30	20	50	1
HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules	3	0	0	40	60	100	3
HVPE102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)	0	0	1	25	--**	25	1
BMPD102-18		Mentoring and Professional Development	0	0	1	25	--**	25	1
	TOTAL		13	3	16	460	440	900	25

****The Human Values, De-addiction and Traffic Rules (Lab/ Seminar) and Mentoring and Professional Development course will have internal evaluation only. (See guidelines at the last page of this file)**

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Second Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1907	Core Theory	Fundamentals of Statistics	3	1	0	40	60	100	4
UGWD1903	Core Theory	Concepts of Website Designing and Development	3	1	0	40	60	100	4
UGCA1909	Core Theory	Object Oriented Programming using C++	3	1	0	40	60	100	4
UGCA1910	Core Practical/Laboratory	Object Oriented Programming using C++ Laboratory	0	0	4	60	40	100	2
UGCA1911	Core Practical/Laboratory	Fundamentals of Statistics Laboratory	0	0	4	60	40	100	2
UGWD1904	Practical/Laboratory	Workshop on Digital Image Editing	0	0	4	60	40	100	2
EVS102-18	Ability Enhancement Compulsory Course (AECC) -III	Environmental Studies	2	0	0	40	60	100	2
BMPD202-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		11	3	13	365	360	725	21

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Third Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1915	Core Theory	Data Structures	3	1	0	40	60	100	4
UGWD1905	Core Theory	Elements of Design	3	1	0	40	60	100	4
UGCA1922	Core Theory	Database Management Systems	3	1	0	40	60	100	4
UGCA1918	Core Practical/Laboratory	Data Structures Laboratory	0	0	4	60	40	100	2
UGWD1906	Core Practical/Laboratory	Elements of Design Laboratory	0	0	4	60	40	100	2
UGCA1925	Core Practical/Laboratory	Database Management Systems Laboratory	0	0	4	60	40	100	2
UGWD1907	Skill Enhancement Course-I	Image Editing & Photography	1	0	0	40	60	100	1
UGWD1908	Skill Enhancement Course- Laboratory	Image Editing & Photography Laboratory	0	0	2	20	30	50	1
BMPD302-18		Mentoring and Professional Development	0	0	1	25	--**	25	1
	TOTAL		10	3	15	385	390	775	21

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Fourth Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1914	Core Theory	Programming in Python	3	1	0	40	60	100	4
UGWD1909	Core Theory	Animation Art	3	1	0	40	60	100	4
UGCA1934	Core Theory	Computer Graphics	3	1	0	40	60	100	4
UGCA1917	Core Practical/Laboratory	Programming in Python Laboratory	0	0	4	60	40	100	2
UGWD1910	Core Practical/Laboratory	Animation Art Laboratory	0	0	4	60	40	100	2
UGCA1940	Core Practical/Laboratory	Computer Graphics Laboratory	0	0	4	60	40	100	2
UGWD1911	Skill Enhancement Course-II	Video Editing	1	0	0	40	60	100	1
UGWD1912	Skill Enhancement Course-Laboratory	Video Editing Laboratory	0	0	2	20	30	50	1
BMPD402-18		Mentoring and Professional Development	0	0	1	25	---	25	1
	TOTAL		10	3	15	385	390	775	21

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Fifth Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1929	Core Theory	Programming in PHP	3	0	0	40	60	100	3
UGWD1913	Core Theory	Multimedia 2D & 3D Designing	3	0	0	40	60	100	3
UGWD1914	Core Theory	Lighting and Rendering	3	0	0	40	60	100	3
	Elective-I		3	0	0	40	60	100	3
UGCA1930	Core Practical/ Laboratory	Programming in PHP Laboratory	0	0	4	30	20	50	2
UGWD1915	Core Practical/ Laboratory	Multimedia 2D & 3D Designing Laboratory	0	0	4	30	20	50	2
UGWD1916	Skill Enhancement Course- Laboratory	Lighting and Rendering Laboratory	0	0	4	30	20	50	2
	Elective-I/ Laboratory		0	0	4	30	20	50	2
	Project	Project 1	0	0	4	60	40	100	2
BMPD502-18		Mentoring and Professional Development	0	0	1	25	--**	25	1
	TOTAL		12	0	21	365	360	725	23

Elective -I	
Course Code	Course Title
UGCA1936	Cloud Computing
UGCA1935	Linux Operating System
UGCA1945	Artificial Intelligence

Elective-I Laboratory	
Course Code	Course Title
UGCA1942	Cloud Computing Laboratory
UGCA1941	Linux Operating System Laboratory
UGCA1951	Artificial Intelligence Laboratory

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Six Semester

CourseCode	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGWD1917	Core Theory	Motion Graphics & Composition	3	0	0	40	60	100	3
UGCA1947	Core Theory	Digital Marketing	3	0	0	40	60	100	3
UGWD1918	Skill Enhancement Course-II	Introduction to Gaming	3	0	0	40	60	100	3
	Elective-II		3	0	0	40	60	100	3
UGWD1920	Core Practical/Laboratory	Motion Graphics & Composition Laboratory	0	0	4	30	20	50	2
UGCA1953	Core Practical/Laboratory	Digital Marketing Laboratory	0	0	4	30	20	50	2
UGWD1921	Skill Enhancement Course-Laboratory	Introduction to Gaming Laboratory	0	0	4	30	20	50	2
	Elective-II/Laboratory		0	0	4	30	20	50	2
	Project	Project-2	0	0	4	60	40	100	2
BMPD602-18		Mentoring and Professional Development	0	0	1	25	--**	25	1
	TOTAL		12	0	21	365	360	725	23

Elective -II	
Course Code	Course Title
UGCA1932	Programming in Java
UGCA1950	Machine Learning
UGCA1948	Information Security

Elective-II Laboratory	
Course Code	Course Title
UGCA1938	Programming in Java Laboratory
UGCA1956	Machine Learning Laboratory
UGCA1954	Information Security Laboratory

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Course Code: UGCA1901

Course Name: Mathematics

Program: B.Sc in Graphics and Web Designing	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: Student must have the knowledge of Basic Mathematics.

Co requisite: NA.

Additional material required in ESE: Minimum two exercises of each concept will be recorded in the file and the file will be submitted in End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Represent data using various mathematical notions.
CO2	Explain different terms used in basic mathematics.
CO3	Describe various operations and formulas used to solve mathematical problems.

Detailed contents	Contact hours
<u>Unit-I</u> Set Introduction, Objectives, Representation of Sets (Roster Method, Set Builder Method), Types of Sets (Null Set, Singleton Set, Finite Set, Infinite Set, Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set, Universal Set) and Operation with Sets (Union of Set, Intersection of Set, Difference of Set, Symmetric Difference of Set) Universal Sets, Complement of a Set.	12 hours
<u>Unit-II</u> Logic Statement, Connectives, Basic Logic Operations (Conjunction, Disjunction, Negation) Logical Equivalence/Equivalent Statements, Tautologies and Contradictions.	10 hours
<u>Unit -III</u> Matrices Introduction, Types of Matrix (Row Matrix, Column Matrix, Rectangular Matrix, Square Matrix, Diagonal Matrix, Scalar Matrix, Unit	12 hours

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Matrix, Null Matrix, Comparable Matrix, Equal Matrix), Scalar Multiplication, Negative of Matrix, Addition of Matrix, Difference of two Matrix, Multiplication of Matrices, Transpose of a Matrix.	
<u>Unit-IV</u> Progressions Introduction, Arithmetic Progression, Sum of Finite number of quantities in A.P, Arithmetic Means, Geometric Progression, Geometric Mean.	10 hours

Text Books:

1. Discrete Mathematics and Its Applications by Kenneth H. Rosen, McGraw Hill, 6th Edition, 2017.
2. College Mathematics, Schaum Series, Frank Ayers and Philip A. Schmidt published by Tata McGraw Hill, 2010.

Reference Books:

1. Elementary Mathematics, Dr. RD Sharma, RD Sharma Publication.
2. Comprehensive Mathematics, Parmananad Gupta by Luxmi Publisher, 2010.
3. Elements of Mathematics, ML Bhargava by jeevansons, 2006.

E Books/ Online learning material

1. www.see.leeds.ac.uk/geo-maths/basic_maths.pdf
2. www.britannica.com/science/matrix-mathematics
3. www.pdfdrive.com/schaums-outline-of-discrete-mathematics-third-edition-schaums-e6841453.html

Course Code: UGCA1902

Course Name: Fundamentals of Computer and IT

Program: B.Sc in Graphics and Web Designing	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

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Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Understanding the concept of input and output devices of Computers
CO2	Learn the functional units and classify types of computers, how they process information and how individual computers interact with other computing systems and devices.
CO3	Understand an operating system and its working, and solve common problems related to operating systems
CO4	Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.
CO5	Study to use the Internet safely, legally, and responsibly

Detailed Contents	Contact hours
Unit-I Human Computer Interface Concepts of Hardware and Software; Data and Information. Functional Units of Computer System: CPU, registers, system bus, main memory unit, cache memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors. Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter. Memory: Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks. Data Representation: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversions and Binary Arithmetic (Addition/ Subtraction/ Multiplication) Applications of IT.	12
Unit-II Concept of Computing, Types of Languages: Machine, assembly and High level Language; Operating system as user interface, utility programs. Word processing: Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail-merge, equation editors.	10
Unit-III	10

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<p>Spreadsheet: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs.</p> <p>Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.</p>	
<p>Unit-IV</p> <p>Electronic Payment System: Secure Electronic Transaction, Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card E-Money, Bit Coins and Crypto currency, Electronic Fund Transfer (EFT), Unified Payment Interface (UPI), Immediate Payment System (IMPS), Digital Signature and Certification Authority.</p> <p>Introduction to Bluetooth, Cloud Computing, Big Data, Data Mining, Mobile Computing and Embedded Systems and Internet of Things (IoT)</p>	12

Text Books:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, second edition, 2012.
2. Computer Fundamentals , A. Goel, Pearson Education, First edition, 2010.
3. Fundamentals of Computers, P. K.Sinha & P. Sinha, BPB Publishers, Reprint Edition 2018 edition (30 November 2004).
4. “Introduction to Information Technology”, Satish Jain, Ambrish Rai & Shashi Singh, Paperback Edition, BPB Publications, 2014.
5. IT Tools, R.K. Jain, Khanna Publishing House.

Reference Books:

1. “Introduction to Computers”, Peter Norton, McGraw Hill Education; 7 edition (1 July 2017).
2. Computers Today, D. H. Sanders, McGraw Hill. First Edition edition (1983)
3. “Computers”, Larry long & Nancy long, Twelfth edition, Prentice Hall. (January 13, 2004)
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning , Cengage Learning; 15 edition (February 23, 2017).

E Books/ Online learning material

1. www.sakshat.ac.in
2. <https://swayam.gov.in/course/4067-computer-fundamentals>

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Course Code: UGWD1901

Course Name: Introduction to Scripting languages

Program: B.Sc in Graphics and Web Designing	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Theory/Practical: Theory	Theory/Practical: Theory
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Student should be able to understand various tags under HTML.
CO2	Students should be able to write HTML programs.
CO3	To develop HTML pages and websites.

Detailed Contents	Contact hours
Unit-I Introduction to HTML, HTML and the World Wide Web, HTML elements, basic structure elements of HTML, creating HTML pages, HTML tags, colour and fonts, formatting the body section, creating links. Adding graphics with image elements, using image as links, image maps, image files. Adding sound and Video formats, other multimedia formats, adding multimedia to web pages.	10
Unit-II Presenting information in tables, Understanding the use of frames, frame set documents, targetedlinks, non frame elements, inline frames. Building interactivity with forms, form elements and attributes, using form control elements, processing forms.	11
Unit-III Style Sheets & Graphics in HTML: Understanding styles, Style rules, Creating styles for tags, Creating classes & applying style. Formatting text & paragraphs in HTML: Introduction to Font family, Style sheets, Displaying graphics Page Layout & Navigation in HTML: Navigational Aids, Layouts, Tables & Forms, Incorporating Sound & Video	11

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Unit-IV Introduction to Cascading Style Sheets: Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format,Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties), Creating page Layout and Site Designs.	12
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Text Books:

1. HTML & CSS: The Complete Reference, Fifth Edition (English, Paperback, Powell Thomas), edition Tata McGraw-Hill, 2003.
2. Internet& Web Technologies by Raj Kamal, edition Tata McGraw-Hill Education.2009.
3. Fundamentals of Internet and WWW, by Greenlaw R; Heppe, 2nd Edition, Tata McGraw-Hill, 2007.

E-Books/ Online learning material:

1. https://www.tutorialspoint.com/html/html_tutorial.pdf
2. <https://www.w3schools.com/html/>
3. https://www.cs.uct.ac.za/mit_notes/web_programming.html
4. http://www.pagetutor.com/table_tutor/index.html

Course Code: UGCA1904

Course Name: Workshop on Desktop Publishing

Program: B.Sc in Graphics and Web Designing	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 Hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester examinations (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have basic understanding of designing/ Painting tools.

Co requisite: Printing & Publishing tools.

Additional material required in ESE: Softcopy & Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

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Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	The students will gain professional skills of <i>Desk Top Publishing</i> Tools like designing, Printing & Publishing by using various tools.
CO2	Develop skills in printing jobs through basic understanding of a variety of designing tools.
CO3	Apply these concepts and knowledge in designing field including practice from text formatting to final publishing.
CO4	Workshops are included to enhance professional skills like Brochures, Flexes, Business Cards, Certificates and News Letter layouts etc.

Assignments:

1.	Design and print a <i>Title Page</i> of a Magazine/Book.
2.	Prepare multiple designs for a <i>Flex</i> by using different Tools.
3.	Prepare <i>NSS Certificates</i> for appreciation using logos of University, College & NSS unit.
4.	Prepare 5 different Designing of <i>Business Cards</i> .
5.	Prepare <i>Envelops</i> displaying full address of the company by inserting graphical symbol/ logos of company.
6.	Design and Print <i>Invoices</i> for three companies.
7.	Prepare and print <i>News Letter Layouts</i> for any five activities of your college/ university.
8.	Prepare <i>Invitation Cards</i> for cultural meet held in your college.
9.	Design and print <i>Brochures</i> to advertise a “Blood Donation Camp” in your college.
10.	Design <i>Logos</i> of your college, University & Govt. of Punjab also display these logos on black background as water mark.
11.	Design, Print and Publish 5 motivations Playcards.
12.	Design & Print assignment book of minimum 20 Pages an any Topic.
13.	Design & Print any five most important activities of your college in a collage.
14.	Design & Print Question Paper of any Subject.
15.	Assemble all the latest news cutting of your activities on a 10 X 8 size flex.

Reference Books:

1. DTP Course, First edition by ShirishChavan published by Rapidex, 2003.
2. DTP Course Kit, First edition by Vikas Gupta published by Comdex,2010.
3. CorelDraw 9, first edition by David Karlins published by Techmedia, Pearson Education (US),1999.
4. Adobe Illustrator CC, First edition by Brian Wood published by Adobe Press, 2019.

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5. Page Maker in Easy Steps - Scott Basham, DTECH (2000).

Software Tools:

1. Adobe Illustrator 14.
 2. CorelDraw Graphics Suit.
 3. GNU image manipulation program.
 4. Ink Scape.
 5. PhotoScape Setup.
 6. PM701.
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Course Code: UGWD1902

Course Name: Introduction to Scripting languages Laboratory

Program: B.Sc in Graphics and Web Designing	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 Hours per week
Theory/Practical: Practical	Duration of end semester exam (ESE): 3hrs
Internal max. marks: 60	Elective status: Core
External max. marks: 40	
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Student should be able to understand various tags under HTML.
CO2	Students should be able to write HTML programs.
CO3	To develop HTML pages and websites.

Instructions: Develop all programs in HTML language.

Assignments:

1.	Acquaintance with elements, Tags and basic structure of HTML files.
2.	Practicing basic and advanced text formatting.

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3.	Working with Background, Text and Font properties.
4.	Practicing use of multimedia components (Image, Video & Sound) in HTML document.
5.	Designing of webpage-Document Layout.
6.	Designing of webpage-Working with List.
7.	Designing of webpage-Working with Tables.
8.	Practicing Hyper linking of Webpages.
9.	Designing of webpage-Working with Frames.
10.	Designing of webpage-Working with Forms and Controls.
11.	Acquaintance with creating style sheet, CSS properties and styling.

Course Code: UGCA1906

Course Name: Fundamentals of Computer and IT Laboratory

Program: B.Sc in Graphics and Web Designing	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 Hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: - NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Familiarizing with Open Office (Word processing, Spreadsheets and Presentation).
CO2	To acquire knowledge on editor, spread sheet and presentation software.
CO3	The students will be able to perform documentation and accounting operations.
CO4	Students can learn how to perform presentation skills.

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Instructions:

Word Orientation: The instructor needs to give an overview of word processor. Details of the four tasks and features that would be covered Using word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter.	
1.	Using word to create Resume Features to be covered: - Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in Word.
2.	Creating an Assignment Features to be covered: - Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.
3.	Creating a Newsletter Features to be covered :- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs
4.	Creating a Feedback form Features to be covered:- Forms, Text Fields, Inserting objects, Mail Merge in Word.
Excel Orientation: The instructor needs to tell the importance of Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered Excel – Accessing, overview of toolbars, saving excel files,	
1.	Creating a Scheduler Features to be covered :- Gridlines, Format Cells, Summation, auto fill, Formatting Text
2.	Calculations Features to be covered :- Cell Referencing, Formulae in excel – average, std.deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP
3.	Performance Analysis Features to be covered :- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting
4.	Game (like Cricket, badminton) Score Card Features to be covered :- Pivot Tables, Interactive Buttons, Importing Data, Data Protection, Data Validation
Presentation Orientation:	
1.	Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows

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2.	This session helps students in making their presentations interactive. Topics covered includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts
3.	Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation. Topics covered includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides. Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing
4.	Power point test would be conducted. Students will be given model power point presentation which needs to be replicated
Internet and its Applications The instructor needs to tell the how to configure Web Browser and to use search engines by defining search criteria using Search Engines	
1.	To learn to setup an e-mail account and send and receive e-mails
2.	To learn to subscribe/post on a blog and to use torrents for accelerated downloads
3.	Hands on experience in online banking and Making an online payment for any domestic bill

Reference Books:

1. IT Tools, R.K. Jain, Khanna Publishing House.
2. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, second edition, 2012.
3. Introduction to information technology, Turban, Rainer and Potter, John Wiley and Sons, 3rd Edition edition (24 May 2004).
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning , Cengage Learning; 15 edition (February 23, 2017).

AECC (For UGC courses)

BTHU103-18 English:

Program: B.Sc in Graphics and Web Designing	L: 1 T: 0 P: 0
Branch: Computer Applications	Credits: 1
Semester: 1 st	Contact hours: --
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): --
External max. marks: 60	Elective status: core/elective: --
Total marks: 100	

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Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
CO2	To help the students become the independent users of English language.
CO3	To develop in them vital communication skills which are integral to their personal, social and professional interactions.
CO4	The syllabus shall address the issues relating to the Language of communication. Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Detailed Contents:

Unit1- 1 (Introduction)

- Theory of Communication
- Types and modes of Communication

Unit- 2 (Language of Communication)

- Verbal and Non-verbal
- (Spoken and Written)
- Personal, Social and Business
- Barriers and Strategies
- Intra-personal, Inter-personal and Group communication

Unit-3 (Reading and Understanding)

- Close Reading
- Comprehension
- Summary Paraphrasing
- Analysis and Interpretation
- Translation(from Hindi/Punjabi to English and vice-versa)

OR

Precise writing /Paraphrasing (for International Students)

- Literary/Knowledge Texts

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Unit-4 (Writing Skills)

- Documenting
- Report Writing
- Making notes
- Letter writing

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
 2. *Business English*, Pearson, 2008.
 3. *Language, Literature and Creativity*, Orient Blackswan, 2013.
 4. *Language through Literature* (forthcoming) ed. Dr. Gauri Mishra, DrRanjanaKaul, Dr Brati Biswas
 5. *On Writing Well*. William Zinsser. Harper Resource Book. 2001
 6. *Study Writing*. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.
-

AECC

BTHU104/18 English Practical/Laboratory

Program: B.Sc in Graphics and Web Designing	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 1
Semester: 1 st	Contact hours:
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE):
External max. marks: 20	Elective status:
Total marks: 50	

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
CO2	To help the students become the independent users of English language.
CO3	To develop in them vital communication skills which are integral to their personal, social and professional interactions.
CO4	The syllabus shall address the issues relating to the Language of communication. Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills as well as writing skills such as report writing, note taking etc.

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The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Interactive practice sessions in Language Lab on Oral Communication

- Listening Comprehension
- Self Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations
- Monologue
- Effective Communication/ Mis- Communication
- Public Speaking

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
 2. *Business English*, Pearson, 2008.
 3. *Practical English Usage*. Michael Swan. OUP. 1995.
 4. *Communication Skills*. Sanjay Kumar and PushpLata. Oxford University Press. 2011.
 5. *Exercises in Spoken English*. Parts. I-III. CIEFL, Hyderabad. Oxford University Press, 1997.
-

Course Code: HVPE101-18

Course Name: Human Values, De-addiction and Traffic Rules

Program: B.Sc in Graphics and Web Designing	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 1 st	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Ability Enhancement

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

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CO#	Course outcomes
CO1	To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
CO2	To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.
CO3	To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

Note: This course is intended to provide a much needed orientational input in Value Education to the young enquiring minds.

Detailed Contents	Contact hours
Unit-I Course Introduction - Need, Basic Guidelines, Content and Process for Value Education <ol style="list-style-type: none"> 1. Understanding the need, basic guidelines, content and process for Value Education 2. Self-Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self-exploration 3. Continuous Happiness and Prosperity- A look at basic Human Aspirations 4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority 5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario 6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels 	8
Unit-II Understanding Harmony in the Human Being - Harmony in Myself! <ol style="list-style-type: none"> 1. Understanding human being as a co-existence of the sentient 'I' and the material 'Body' 	8

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<ol style="list-style-type: none"> 2. Understanding the needs of Self ('I') and 'Body' - <i>SukhandSuvidha</i> 3. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer) 4. Understanding the characteristics and activities of 'I' and harmony in 'I' 5. Understanding the harmony of I with the Body: <i>Sanyam</i> and <i>Swasthya</i>; correct appraisal of Physical needs, meaning of Prosperity in detail 6. Programs to ensure <i>Sanyam</i> and <i>Swasthya</i> - Practice Exercises and Case Studies will be taken up in Practice Sessions. 	
<p>Unit-III</p> <p>Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship</p> <ol style="list-style-type: none"> 1. Understanding harmony in the Family- the basic unit of human interaction 2. Understanding values in human-human relationship; meaning of <i>Nyaya</i> and program for its fulfillment to ensure <i>Ubhay-tripti</i>; Trust (<i>Vishwas</i>) and Respect (<i>Samman</i>) as the foundational values of relationship 3. Understanding the meaning of <i>Vishwas</i>; Difference between intention and competence 4. Understanding the meaning of <i>Samman</i>, Difference between respect and differentiation; the other salient values in relationship 5. Understanding the harmony in the society (society being an extension of family): <i>Samadhan</i>, <i>Samridhi</i>, <i>Abhay</i>, <i>Sah-astitva</i> as comprehensive Human Goals 6. Visualizing a universal harmonious order in society- Undivided Society (<i>AkhandSamaj</i>), Universal Order (<i>SarvabhaumVyawastha</i>)- from family to world family! - Practice Exercises and Case Studies will be taken up in Practice Sessions. 	6
<p>Unit-IV</p> <p>Understanding Harmony in the Nature and Existence - Whole existence as Co-existence</p> <ol style="list-style-type: none"> 1. Understanding the harmony in the Nature 2. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature 3. Understanding Existence as Co-existence (<i>Sah-astitva</i>) of mutually 	5

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<p>interacting units in all-pervasive space</p> <p>4. Holistic perception of harmony at all levels of existence - Practice Exercises and Case Studies will be taken up in Practice Sessions.</p>	
<p>Unit-V</p> <p>Implications of the above Holistic Understanding of Harmony on Professional Ethics</p> <ol style="list-style-type: none"> 1. Natural acceptance of human values 2. Definitiveness of Ethical Human Conduct 3. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order 4. Competence in professional ethics: <ol style="list-style-type: none"> a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, c) Ability to identify and develop appropriate technologies and management patterns for above production systems. 5. Case studies of typical holistic technologies, management models and production systems 6. Strategy for transition from the present state to Universal Human Order: <ol style="list-style-type: none"> a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers b) At the level of society: as mutually enriching institutions and organizations. 	6

Text Book

1. R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Reference Books

1. Ivan Illich, 1974, *Energy &Equity*,The Trinity Press, Worcester, and HarperCollins, USA.
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *JeevanVidyaekParichay*,Divya Path Sansthan, Amarkantak.
4. Sussan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991.

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5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Publishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers.
7. SubhasPalekar, 2000, *How to practice Natural Farming*, Pracheen(Vaidik) KrishiTantraShodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome's report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajran, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd.
11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, <http://uhv.ac.in>
2. Story of Stuff, <http://www.storyofstuff.com>
3. Al Gore, An Inconvenient Truth, Paramount Classics, USA
4. Charlie Chaplin, Modern Times, United Artists, USA
5. IIT Delhi, Modern Technology – the Untold Story

Course Code: HVPE102-18

Course Name: Human Values, De-addiction and Traffic Rules (Lab/ Seminar)

Program: B.Sc in Graphics and Web Designing	L: 0 T: 0 P: 1
Branch: Computer Applications	Credits: 1
Semester: 1 st	Contact hours:
Internal max. marks: 25	Theory/Practical: Practical
External max. marks: 0	Duration of end semester exam (ESE): 3hrs
Total marks: 25	Elective status: Ability Enhancement

One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the Seminar at least once during the semester. It will be binding for all the students to attend the seminar.

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Course Code: UGCA1907

Course Name: Fundamentals of Statistics

Program: B.Sc in Graphics and Web Designing	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have the basic knowledge of mathematic terms.

Co requisite: NA

Additional material required in ESE: Minimum two exercises of each concept will be recorded in the file and the file will be submitted in End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Understand the science of studying & analyzing numbers.
CO2	Identify and use various visualization tools for representing data.
CO3	Describe various statistical formulas.
CO4	Compute various statistical measures.

Detailed Contents	Contact hours
Unit I Statistics and Probability: Introduction to Statistics – Origin of Statistics, Features of Statistics, Scope of Statistics, Functions of Statics, Uses and importance of Statistics, Limitation of Statistics, Distrust of Statistics Collection of Data: Introduction to Collection of Data, Primary and Secondary Data, Methods of Collecting Primary Data, Methods of Secondary Data, Statistical Errors, Rounding off Data (Approximation).	8 hours
Unit II Classification of Data Frequency Distribution: Introduction Classification of Data, Objectives of Classification, Methods of Classification, Ways to Classify Numerical Data or Raw Data.	12 hours

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Tabular, Diagrammatic and Graphic Presentation of Data: Introduction to Tabular Presentation of Data, Objectives of Tabulation, Components of a Statistical Table, General Rules for the Construction of a Table, Types of Tables, Introduction to Diagrammatic Presentation of Data, Advantage and Disadvantage of Diagrammatic Presentation, Types of Diagrams, Introduction to Graphic Presentation of Data, Advantage and Disadvantage of Graphic Presentation, Types of Graphs.	
Unit III Measures of Central tendency: Introduction to Central Tendency, Purpose and Functions of Average, Characteristics of a Good Average, Types of Averages, Meaning of Arithmetic Mean, Calculation of Arithmetic Mean, Merit and Demerits of Arithmetic Mean, Meaning of Median, Calculation of Median, Merit and Demerits of Median, Meaning of Mode, Calculation of Mode, Merit and Demerits of Mode, Harmonic Mean- Properties- Merit and Demerits.	12 hours
Unit IV Measures of Dispersion: Meaning of Dispersion, Objectives of Dispersion, Properties of a good Measure of Dispersion, Methods of Measuring Dispersion, Range Introduction, Calculation of Range, Merit and Demerits of Range, Mean Deviation, Calculation of Mean Deviation, Merit and Demerits of Mean Deviation, Standard Deviation Meaning, Calculation of Standard Deviation, Merit and Demerits of Standard Deviation, Coefficient of Variation, Calculation of Coefficient Variance, Merit and Demerits of Coefficient of Variation.	12 hours

Text Books:

1. Statistics and Data Analysis, A.Abebe, J. Daniels, J.W.Mckean, December 2000.
2. Statistics, Tmt. S. EzhilarasiThiru, 2005, Government of Tamilnadu.
3. Introduction to Statistics, David M. Lane, 2013.
4. Weiss, N.A., Introductory Statistics. Addison Wesley, 1999.
5. Clarke, G.M. & Cooke, D., A Basic course in Statistics. Arnold, 1998.

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Reference Books:

1. Banfield J.(1999), Rweb: Web-based Statistical Analysis, Journal of Statistical Software.
2. Bhattacharya,G.K. and Johnson, R.A.(1997), Statistical Concepts and Methods, New York, John Wiley & Sons.

E-Books/ Online learning material

1. http://onlinestatbook.com/Online_Statistics_Education.pdf
2. <https://textbookcorp.tn.gov.in/Books/12/Std12-Stat-EM.pdf>
3. <https://3lihandam69.files.wordpress.com/2015/10/introductorystatistics.pdf>

Course Code: UGWD1903

Course Name: Concepts of Website designing and development

Program: B.Sc in Graphics and Web Designing	L:3 T:1 P:0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Theory/Practical: Theory	Duration of end semester exam (ESE): 3hrs
Internal max. marks: 40	Elective status: Core
External max. marks: 60	
Total marks: 100	

Prerequisite: Basics of HTML and WWW

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Know about the basic functioning of WWW and websites
CO2	Learn various WWW concepts
CO3	Learn the concepts of web designing
CO4	Learn how to host websites

Detailed Contents	Contact hours
Unit-I Introduction to WWW: Protocols and programs, secure connections, application and development tools, the web browser. Web site design principles, planning the site and navigation	10

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Web Essentials: Clients, Servers, and Communication. The Internet-Basic Internet Protocols. The WorldWide Web-HTTP request message-response message-Web Clients, What is server, choices, setting up servers, Logging users, dynamic IP. Understanding hyperlinks, URLS, Domain names. Concepts of web hosting. Introduction to Web servers- Windows based/Linux based. Introduction to W3C Standards.	
Unit-II Types of Websites: Static and Dynamic websites, Ideas about Open Source, Creative Commons, worldwideweb-based philanthropic projects Web Design: Concepts of effective web design, Web design issuesincluding Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Website, Page Layout andlinking, User centric design,Sitemap, Planning and publishing website, Designing effective navigation.	12
Unit-III Introduction to database- MySQL, Introduction to server-side scripting language- PHP, Introduction to Client -side scripting- Javascript, Understanding how MySQL and PHP works together tocreate a dynamic website, Integrating XML,DHTML Understanding content management system (CMS): Introduction to open source CMS- Joomla, Concepts of Categories and Articles, Concepts of Modules, components and plugins.	10
Unit-IV Blog Interface: What are blogs, The most popular blog engines- Word press and Blogger, Introduction to the blog interface dashboard, Categories, tags, permalinks and shortlinks. Search Engine Optimization: Introduction to SEO, Search Engines- how search engines work, Black Hat vs White Hat SEO, Best SEO practices, Keywords, How to write web content, Parameters/standard of good SEO.	12

Text Books:

1. Web Technologies, Uttam K Roy, Oxford University Press
2. The Complete Reference PHP – Steven Holzner, Tata McGraw-Hill
3. Web Applications : Concepts and Real World Design, Knuckles, Wiley-India
4. Internet and World Wide Web How to program, P.J. Deitel& H.M. Deitel Pearson.

Reference Books:

1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
2. Steven Holzner,"HTML Black Book", Dremtech press.
3. Web Technologies, Black Book, Dreamtech Press

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4. Web Design, Joel Sklar, Cengage Learning

Course Code: UGCA1909

Course Name: Object Oriented Programming using C++

Program: B.Sc in Graphics and Web Designing	L:3 T:1 P:0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	To learn programming from real world examples.
CO2	To understand Object oriented approach for finding Solutions to various problems with the help of C++ language.
CO3	To create computer based solutions to various real-world problems using C++
CO4	To learn various concepts of object oriented approach towards problem solving

Detailed Contents	Contact hours
Unit-I Principles of object oriented programming Introduction to OOP and its basic features, Basic components of a C++, Program and program structure, Compiling and Executing C++ Program. Difference between Procedure Oriented Language(C) and Object Oriented Language	12
Unit-II Classes & Objects and Concept of Constructors Defining classes, Defining member functions, Declaration of objects to class, Access to member variables from objects, Different forms of member functions, Access specifiers (Private, public, protected), Array of objects. Introduction to constructors, Parameterized constructors, Copy Constructor,	10

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Multiple constructors in class, Dynamic initialization of objects, Destructors.	
Unit-III Inheritance and Operator overloading Introduction to Inheritance, Types of inheritance: - Single inheritance, Multiple inheritance, Multilevel inheritance, Hierarchical inheritance, Hybrid inheritance, Defining operator overloading, Overloading of Unary and Binary operators, Rules for overloading operators	12
Unit-IV Polymorphism and File Handling Early Binding, Late Binding, Virtual Functions, pure virtual functions, Abstract Classes. Opening and Closing File, Reading and Writing a file.	10

Text Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, TataMc-Graw Hill, 2009.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications, 2013.
3. The C++ Programming Language, BjarnaStroustrup, Third Edition, Addison-Wesley Publishing Company, 2015.
4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing, 2017.

Course Code: UGCA1910

Course Name: Object Oriented Programming using C++ Laboratory

Program: B.Sc in Graphics and Web Designing	L:0 T:0 P:4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 Hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

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Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	To learn programming from real world examples.
CO2	To understand Object oriented approach for finding Solutions to various problems with the help of C++ language.
CO3	To create computer based solutions to various real-world problems using C++
CO4	To learn various concepts of object oriented approach towards problem solving

Instructions: Develop all program in C++

Assignments:

1.	Write a program to enter mark of 6 different subjects and find out the total mark (Using cin and cout statement)
2.	Write a function using reference variables as arguments to swap the values of pair of integers.
3.	Write a function to find largest of three numbers.
4.	Write a program to find the factorial of a number.
5.	Define a class to represent a bank account which includes the following members as Data members: a) Name of the depositor b)Account Number c)Withdrawal amount d)Balance amount in the account Member Functions: a) To assign initial values b)To deposit an amount c) To withdraw an amount after checking the balance d) To display name and balance.
6.	Write the above program for handling n number of account holders using array of objects.
7.	Write a C++ program to compute area of right angle triangle, equilateral triangle, isosceles triangle using function overloading concept.
8.	Consider a publishing company that markets both book and audio cassette version to its works. Create a class Publication that stores the title (a string) and price (type float) of a publication. Derive the following two classes from the above Publication class: Book which adds a page count (int) and Tape which adds a playing time in minutes(float). Each class should have get_data() function to get its data from the user at the keyboard. Write the main() function to test the Book and Tape classes by creating instances of them asking the user to fill in data with get_data() and then displaying it using put_data().
9.	Consider an example of declaring the examination result. Design three classes student, exam and result. The student has data members such as rollno, name. Create the lass exam by inheriting the student class. The exam class adds data members representing the marks scored in 5 subjects. Derive the result from exam-

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	class and it has own data members like total, avg.
10.	Write a program for overloading of Unary ++ operator.
11.	Write a program for overloading of Binary + operator.
12.	Write a program of Virtual Functions.
13.	Write a program of Abstract Classes.
14.	Write a program to read and write from file.

Reference Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, TataMc-Graw Hill.
 2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
 3. The C++ Programming Language, BjarnaStroustrup, Third Edition, Addison-Wesley Publishing Company.
 4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.
-

Course Code: UGCA1911

Course Name: Fundamentals of Statistics Laboratory

Program: B.Sc in Graphics and Web Designing	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 Hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have the knowledge of Spreadsheet.

Co requisite: The students will develop analytical behavior & will have better understanding of analyzing data and testing hypotheses.

Additional material required in ESE: Minimum two exercises of each concept will be recorded in the file and the file will be submitted in End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Represent data using various Frequency table and Graphs.
CO2	Apply various operations/ formulas using any software/package to solve statistical problems.

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Instructions:

1:	Display the Maximum and Minimum market data.														
2:	Display year wise strength of the students of a college in Tabular form & Graphical form.														
3:	Calculate the average marks of the students of your College.														
4:	Print measure of Central Tendency using grouped and ungrouped data.														
5:	Construct & print frequency distribution using data with the following Techniques: a) Histogram b) Frequency Polygon c) Frequency Curve c) Ogive curves.														
6:	Find out & display the Median and Mode from the following series by using suitable method: <table><tr><td>Class</td><td>156-158</td><td>158-160</td><td>160-162</td><td>162-164</td><td>164-166</td></tr><tr><td>Frequency</td><td>4</td><td>8</td><td>28</td><td>51</td><td>89</td></tr></table>	Class	156-158	158-160	160-162	162-164	164-166	Frequency	4	8	28	51	89		
Class	156-158	158-160	160-162	162-164	164-166										
Frequency	4	8	28	51	89										
7:	Calculate an appropriate measure of dispersion using grouped and ungrouped data.														
8:	Make an array and calculate range of the data.														
9:	Represent the placement record of the students of your college.														
10:	Calculate & display Letter Grade using spreadsheet.														
11:	Represent the following data by suitable graphs, determine therefrom the number of children having IQ (i) Below 105 (ii) Above 124. <table><tr><td>IQ</td><td>75-84</td><td>85-94</td><td>95-104</td><td>105-114</td><td>115-124</td><td>125-134</td></tr><tr><td>No. of Children</td><td>8</td><td>20</td><td>45</td><td>54</td><td>28</td><td>16</td></tr></table>	IQ	75-84	85-94	95-104	105-114	115-124	125-134	No. of Children	8	20	45	54	28	16
IQ	75-84	85-94	95-104	105-114	115-124	125-134									
No. of Children	8	20	45	54	28	16									

Reference Books:

1. Statistics for Economics, TR Jain, VK Ohri.
2. Statistics and Data Analysis, A.Abebe, J. Daniels, J.W.Mckean, December 2000.

E-Books/ Online learning material

1. https://www.meritnation.com/cbse-class-11-commerce/economics/class_13_tr_jain.
2. http://college.cengage.com/mathematics/brase/understandable_statistics/9780618949922_ch03.pdf
3. http://www.rockcreekschools.org/pages/uploaded_files/Excel%201%20Lab%20Exercises.pdf

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Code: UGWD1904

Course Name: Workshop on Digital Image Editing

Program: B.Sc in Graphics and Web Designing	L:0 T:0 P:4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 Hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	The students will be able to learn photo editing
CO2	The students will understand the function of Photoshop
CO3	The students will understand various types of photo editing tasks

Detailed Contents
Introduction to Photoshop, Creating a New File, Main Selections, Picking color, Filling a selection with color, More ways to choose colors and fill selections, Painting with paintbrush tool, Using the magic wand tool and applying a filter, Saving your document Color Mode, Gray Scale Color Mode, RGB Color Mode, CMYK Color Mode, Bitmap Mode, Open a file, Preference.
Foreground & background, Changing Foreground and Background colors, Using the Large color selection Boxes and small color swathes, Using the Eyedropper tool to sample Image color, Changing the Foreground Color While using a Painting Tool. Using Brushes, Selecting the Brush Shape, Drawing a vertical and Horizontal Straight lines with any brush, Drawing connecting Straight Lines (at any angle) with any brush, Creating a New Brush, Saving Brushes, Loading Brushes, Creating a Custom Brushes, Using the Painting Modes, Fade, Airbrush Options, Pencil Options.
Rubber stamping an Aligned Clone, Rubber Stamping, Impressionist Style, Using line tool, Using the Editing Tool, The Smudge Tool, The Blur and Sharpen Tool, The Dodge / Burn Tool, Shadows, Mid,tones and Highlights, Selection Tools, Making Rectangular and Square Selections, Feathering a Selections, Lasso Features, Lasso Options, Making selections by color or Gray Scale value using the Magic Wand, Moving an anchor point or Direction point to change the shape of curve, Adding and Removing Anchor points, Moving Path, Saving, Loading and Creating New Path, Filling & Stroking Path.
Introduction to layers, Creating & editing New layers, Adding a background, Creating Layer Mask, Layer Masks, Adjustment Layers, Adding Fills and Gradients, Filling with paint bucket tools, Filling type with grading Fills, Applying Filters, Blur Filters, Render Filters, Sharpen

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Filters, Sketch Filters, Texture Filters, Other Special Filters, Printing your document, Save your file, Save file as a JPEG, TIFF, GIF, PNG
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Assignments:

1. Simple text effects
2. Image restoration
3. Image manipulation in Photoshop
4. Movie poster concept
5. Creating story board
6. Digital scenery creation
7. UI Design for smart phones
8. Creating website layout
9. Set extension in Photoshop
10. Digital Matte painting

Text Books:

1. Photoshop CS6 Training Guide, English Paperback, By Satish Jain,BPB Publications),2015.
2. Adobe Photoshop Cs6 Bible,By Lisa Danae and Brad Dayley, Wiley India 2013 Edition.

Reference Books:

1. Photoshop 7 - the ultimate reference by Barstow Bruce & Martin tony.
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**I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)**

**Ability Enhancement Compulsory Course
EVS102-18 Environmental Studies**

Program: BCA	L: 2 T: 0 P: 0
Branch: Computer Applications	Credits: 2
Semester: 2nd	Contact hours: --
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): --
External max. marks: 60	Elective status: Core
Total marks: 100	

Course Outcomes:

1. Students will enable to understand environmental problems at local and national level through literature and general awareness.
2. The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
3. The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world

UNIT-1: Introduction to Environmental Studies

Multidisciplinary nature of Environmental Studies: Scope & Importance
Need for Public Awareness

UNIT-2: Ecosystems

Concept of an Ecosystem: Structure & functions of an ecosystem (Producers, Consumers & Decomposers)

Energy Flow in an ecosystem: Food Chain, Food web and Ecological Pyramids

Characteristic features, structure & functions of following Ecosystems:

- Forest Ecosystem
- Aquatic Ecosystem (Ponds, Lakes, River & Ocean)

UNIT-3: Natural Resources

Renewable & Non-renewable resources

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Forest Resources: Their uses, functions & values (Biodiversity conservation, role in climate change, medicines) & threats (Overexploitation, Deforestation, Timber extraction, Agriculture Pressure), Forest Conservation Act

Water Resources: Their uses (Agriculture, Domestic & Industrial), functions & values, Overexploitation and Pollution of Ground & Surface water resources (Case study of Punjab), Water Conservation, Rainwater Harvesting,

Land Resources: Land as a resource; Land degradation, soil erosion and desertification

Energy Resources: Renewable & non-renewable energy resources, use of alternate energy resources (Solar, Wind, Biomass, Thermal), Urban problems related to Energy

UNIT-4: Biodiversity & its conservation

Types of Biodiversity: Species, Genetic & Ecosystem

India as a mega biodiversity nation, Biodiversity hot spots and biogeographic regions of India

Examples of Endangered & Endemic species of India, Red data book

UNIT-5: Environmental Pollution & Social Issues

Types, Causes, Effects & Control of Air, Water, Soil & Noise Pollution

Nuclear hazards and accidents & Health risks

Global Climate Change: Global warming, Ozone depletion, Acid rain, Melting of Glaciers & Ice caps, Rising sea levels

Environmental disasters: Earthquakes, Floods, Cyclones, Landslides

UNIT-6: Field Work

Visit to a National Park, Biosphere Reserve, Wildlife Sanctuary

Documentation & preparation of a Biodiversity (flora & fauna) register of campus/river/forest

Visit to a local polluted site: Urban/Rural/Industrial/Agricultural

Identification & Photography of resident or migratory birds, insects (butterflies)

Public hearing on environmental issues in a village

Suggested Books:

1. Bharucha, E. Text Book for Environmental Studies. University Grants Commission, New Delhi.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email: mapin@icenet.net (R)
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down to Earth, Centre for Science and Environment (R)

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9. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
 10. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
 11. Heywood, V.H &Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
 12. Jadhav, H &Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
 13. Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
 14. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
 15. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
 16. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
 17. Rao M N. &Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
 18. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
 19. Survey of the Environment, The Hindu (M)
 20. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
 21. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
 22. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p
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B.Sc. (Graphics and Web Designing)

Course Name: Data Structures

Course Code: UGCA1915

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3rd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite:- NA

Co requisite:- NA

Additional material required in ESE:-

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Apply appropriate constructs of Programming language, coding standards for application development.
CO2	Use appropriate data structures for problem solving and programming.
CO3	Use algorithmic foundations for solving problems and programming.
CO4	Apply appropriate searching and/or sorting techniques for application development.
CO5	Develop programming logic and skills.

Detailed contents	Contact hours
<u>UNIT-I</u> Introduction to Data Structures: Algorithms and Flowcharts, Basics Analysis on Algorithm, Complexity of Algorithm, Introduction and Definition of Data Structure, Classification of Data, Arrays, Various types of Data Structure, Static and Dynamic Memory Allocation, Function, Recursion.	10 hours

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<p>Arrays, Pointers and Strings:</p> <p>Introduction to Arrays, Definition, One Dimensional Array and Multi Dimensional Arrays, Pointer, Pointer to Structure, various Programs for Array and Pointer. Strings. Introduction to Strings, Definition, Library Functions of Strings.</p>	
<p><u>UNIT-II</u></p> <p>Stacks and Queue</p> <p>Introduction to Stack, Definition, Stack Implementation, Operations of Stack, Applications of Stack and Multiple Stacks. Implementation of Multiple Stack Queues, Introduction to Queue, Definition, Queue Implementation, Operations of Queue, Circular Queue, De-queue and Priority Queue.</p>	<p>8 hours</p>
<p><u>Unit –III</u></p> <p>Linked Lists and Trees</p> <p>Introduction, Representation and Operations of Linked Lists, Singly Linked List, Doubly Linked List, Circular Linked List, And Circular Doubly Linked List.</p> <p>Trees</p> <p>Introduction to Tree, Tree Terminology Binary Tree, Binary Search Tree, Strictly Binary Tree, Complete Binary Tree, Tree Traversal, Threaded Binary Tree, AVL Tree B Tree, B+ Tree.</p>	<p>14 hours</p>
<p><u>UNIT-IV</u></p> <p>Graphs, Searching, Sorting and Hashing</p> <p>Graphs: Introduction, Representation to Graphs, Graph Traversals Shortest Path Algorithms.</p> <p>Searching and Sorting: Searching, Types of Searching, Sorting, Types of sorting like quick sort, bubble sort, merge sort, selection sort.</p> <p>Hashing: Hash Function, Types of Hash Functions, Collision, Collision Resolution Technique (CRT), Perfect Hashing</p>	<p>12 hours</p>

Text Books:

1. Brijesh Bakariya. Data Structures and Algorithms Implementation through C, BPB Publications.
2. Kruse R.L. Data Structures and Program Design in C; PHI
3. Aho Alfred V., Hopperoft John E., Ullman Jeffrey D., “Data Structures and Algorithms”, AddisonWesley

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Reference books:

1. Horowitz & Sawhney: Fundamentals of Data Structures, Galgotia Publishers.
 2. Yashwant Kanetkar, Understanding Pointers in C, BPB Publications.
 3. Horowitz, S. Sahni, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
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Course Name: Elements of Design

Course Code: UGWD1905

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3rd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: Student must have the basic knowledge of Photoshop and CorelDraw.

Co requisite: NA

Additional material required in ESE:

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Learn methods & means to create images using the elements of design – space, depth, overlaps, transparency, plane, volume etc.
CO2	Create any type of Graphic Design in the software.
CO3	Gain the knowledge of formal systems of visual representation, using the basic principles and elements of design.

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CO4	Learn about the components of Design.
CO5	Students will know the use of typography in Design.

Detailed contents	Contact hours
<p><u>UNIT-I</u></p> <p>Introduction: Visual Perception and Design: Introduction of art and ideas - Visual &Critical thinking and analysis of 2Dimensional (2D) Art through history. Theoretical introduction to the perception, phenomenology, Definition of Design – Different applications of Design.</p> <p>Design Elements: Elements of design: The concepts of design space and concepts of design. Visual elements - Line and shape, Form, value, texture, color - Measure, Type, Direction, Character visual elements.</p>	12 hours
<p><u>UNIT-II</u></p> <p>Principles of Design: Composition in contrast: black and white, positive and negatives, tessellation, units and their shapes, transformations, alteration. Unity and variety / element of interest, contrast, elaboration, Dominance, Expressive content. Color and Composition – Balance, Harmony and rhythm.</p>	10 hours
<p><u>Unit –III</u></p> <p>Composition:</p> <ul style="list-style-type: none"> • Three Principles: Unity, Balance, Centre of interest. • Achieving Emphasis: Light shade, Details, contrasts. • Balance: Asymmetrical Balance, Informal Balance, Radial Balance. <p>Text:</p> <ul style="list-style-type: none"> • Type, text, and meaning. Typography as text and as image, Typography as text and as image combined with pictorial representation. 	12 hours

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<u>UNIT-IV</u> Color Wheel: <ul style="list-style-type: none"> • Mixing of Primary, Secondary and Tertiary Colors. • Tint, Shades, Hues, Tones. • Warm Colors and Cool Colors. • Different Color schemes (Complimentary, Split Complimentary, Analogous, Triadic etc. 	10 hours
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Text Books:

1. Elements and Principles of Design: Student Guide with Activities, Gerald F. Brommer, Crystal Productions, 2000.

Reference books:

1. The Elements of Graphic Design, Alex W. White, Second Edition, Allworth Publications, 2011.
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Course Name: Database Management Systems

Course Code: UGCA1922

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3rd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: --

Co requisite: --

Additional material required in ESE: --

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Understand the basic concepts of DBMS.

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CO2	Formulate, using SQL, solutions to a broad range of query and data update problems.
CO3	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
CO4	Understand the concept of Transaction and Query processing in DBMS.

Detailed Contents	Contact hours
<u>UNIT-I</u> Introduction of DBMS, Data Modeling for a Database, Three level Architecture of DBMS, Components of a DBMS. Introduction to Data Models, Hierarchical, Network and Relational Model, Comparison of Network, Hierarchical and Relational Model, Entity Relationship Model.	10
<u>UNIT-II</u> Relational Database, Relational Algebra and Calculus, SQL Fundamentals, DDL, DML, DCL, PL/SQL Concepts, Cursors, Stored Procedures, Stored Functions, Database Triggers.	12
<u>UNIT-III</u> Introduction to Normalization, First, Second, Third Normal Forms, Dependency Preservation, Boyce-Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form, Domain-key normal form (DKNF).	12
<u>UNIT-IV</u> Database Recovery, Concurrency Management, Database Security, Integrity and Control. Structure of a Distributed Database, Design of Distributed Databases.	10

Text Books:

1. "An Introduction to Database System", Bipin C. Desai, Galgotia Publications Pvt Ltd-New Delhi, Revised Edition, (2012).
2. "Database System Concepts", Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Tata McGraw Hill, 6th Edition, (2013).

Reference Books:

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1. “SQL, PL/SQL The Programming Language of Oracle”, Ivan Bayross, BPB Publications, 4th Revised Edition (2009).
 2. “An Introduction to Database Systems”, C. J. Date, A. Kannan, S. Swamynathan, 8th Edition, Pearson Education, (2006).
 3. Database Management Systems, Raghu Ramakrishnan, McGraw-Hill, Third Edition, 2014.
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Course Name: Data Structures Laboratory

Course Code: UGCA1918

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3rd	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -- Student must have the basic knowledge of C programming

Co requisite:--NA

Additional material required in ESE: -- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Apply appropriate constructs of Programming language, coding standards for application development.
CO2	Develop programming skills for solving problems.
CO3	Apply appropriate searching and/or sorting techniques for application development.

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Instructions: Programs may be developed in C, C++ or Python programming language

1	Program for using Dynamic Functions (malloc(), calloc(), realloc() and free()) functions.
2	Program to insert, delete and traverse an element from an array.
3	Program to merge two one dimensional array.
4	Program for addition, subtraction and multiplication of two matrix.
5	Program for implementing multiplication of two matrices.
6	Implement linear search using single and 2 dimensional array.
7	Program for implementing selection sort.
8	Program for implementing insertion sort.
9	Program for implementing quick sort.
10	Program for implementing merge sort.
11	Program to calculate length of the string using user defined function.
12	Program to concatenate and compare two strings using user defined function.
13	Program for using the concept of pointer to string.
14	Program to reverse a sentence by recursion.
15	Program to delete all repeated words in string.
16	Program to find the number of vowels, consonants, digits and white space in a string.
17	Program to find the length of the longest repeating sequence in a string.
18	Program to find highest and lowest frequency character in a string.
19	Program for implementing Stack using array.
20	Program for implementing Stack using pointer.
21	Program for implementing multiple stack.
22	Program for converting infix to postfix form.
23	Program for implementing Queue using array.

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24	Program for dynamic implementation of queue.
25	Program for implementing of circular queue.
26	Program for implementing of dequeue.
27	Program for implementing of priority queue
28	Program for implementing Singly Linked list.
29	Program for implementing Doubly Linked list
30	Program for implementing Binary Search Tree.
31	Program for Breadth First Search (BFS) for graph traversal.
32	Program for Depth First Search (DFS) for graph traversal.

Reference Books:

1. Brijesh Bakariya. Data Structures and Algorithms Implementation through C, BPB Publications.
 2. Aho Alfred V., Hopperoft John E., Ullman Jeffrey D., “Data Structures and Algorithms”, AddisonWesley.
 3. Horowitz & Sawhaney: Fundamentals of Data Structures, Galgotia Publishers.
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B.Sc. (Graphics and Web Designing)

Course Name: Elements of Design Laboratory

Course Code: UGWD1906

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3rd	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester examinations (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have basic understanding of designing/ Painting tools.

Co requisite: NA

Additional material required in ESE: Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course outcomes: Students will be able to

CO#	Course outcomes
CO1	Learn the skills about Visual Perceptions and Design.
CO2	Know about design measurements and the concepts of design.
CO3	Learn the concept of composition in contrast.
CO4	Enhance designing skills like sketching, shapes and visual designs.

Instructions:

16.	Assignment on pattern design by sketching
17.	Assignment on create cartoon character design.
18.	Assignment on visual logo designing
19.	Assignment on designing 5 different types of conceptual Branding creative's.

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20.	Assignment on magazine covers design by using typography.
21.	Assignment on line and shape design
22.	Assignment on creating character visual elements design
23.	Assignment on Masking and Manipulation of pictures
24.	Assignment on to develop one creative by Radial Balance.
25.	Assignment on creating design by mixing of Primary, Secondary and Tertiary Colors.
26.	Assignment on text and as image combined with pictorial representation.
27.	Assignment on creating Background design by using Warm Colors and Cool Colors.
28.	Assignment on design & Print any five most important activities of your college in a collage.
29.	Assignment on designing & Printing any brochure.
30.	Assignment on assemble all the latest news cutting of your activities on a 10 X 8 size flex.

Text Books:

1. Exploring the Elements of Design, Poppy Evans, Mark A. Thomas, 3rd Edition, Cengage Publications, 2013.
2. The Practical Guide to Information Design, Ronnie Lipton, 1st edition, Wiley Publications, 2007.

Reference books:

1. Design Elements, Timothy Samara, 2nd Edition”, Rockport Publishers, 2014.
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Course Name: Database Management Systems Laboratory

Course Code: UGCA1925

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): --
Total marks: 100	Elective status: Core

Prerequisite:--

Co requisite:-- NA.

Additional material required in ESE:--

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Able to understand various queries and their execution
CO2	Populate and query a database using SQL DML/DDDL commands.
CO3	Declare and enforce integrity constraints on a database
CO4	Programming PL/SQL including stored procedures, stored functions, cursors, packages
CO5	Able to design new database and modify existing ones for new applications and reason about the efficiency of the result

Instructions:

1.	Used of CREATE, ALTER, RENAME and DROP statement in the database tables (relations)
2.	Used of INSERT INTO, DELETE and UPDATE statement in the database tables (relations)
3.	Use of simple select statement.
4.	Use of select query on two relations
5.	Use of nesting of queries.
6.	Use of aggregate functions.
7.	Use of substring comparison.
8.	Use of order by statement.

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9.	<p>Consider the following schema for a LibraryDatabase:</p> <p>BOOK (<i>Book_id, Title, Publisher_Name, Pub_Year</i>)</p> <p>BOOK_AUTHORS (<i>Book_id, Author_Name</i>)</p> <p>PUBLISHER (<i>Name, Address, Phone</i>)</p> <p>BOOK_COPIES (<i>Book_id, Branch_id, No-of_Copies</i>)</p> <p>BOOK_LENDING (<i>Book_id, Branch_id, Card_No, Date_Out, Due_Date</i>)</p> <p>LIBRARY_BRANCH (<i>Branch_id, Branch_Name, Address</i>)</p> <p>Write SQL queries to</p> <ol style="list-style-type: none"> 1. Retrieve details of all books in the library_id, title, name of publisher, authors, number of copies in each branch, etc. 2. Get the particulars of borrowers who have borrowed more than 3 books between Jan 2018 to Jun 2018 3. Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation. 4. Partition the BOOK table based on year of publication. Demonstrate its working with a simple query. 5. Create a view of all books and its number of copies that are currently available in the Library.
10.	<p>Consider the following schema for Order Database:</p> <p>SALESMAN (<i>Salesman_id, Name, City, Commission</i>)</p> <p>CUSTOMER (<i>Customer_id, Cust_Name, City, Grade, Salesman_id</i>)</p>
11	<p>ORDERS (<i>Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id</i>) Write SQL queries to</p> <ol style="list-style-type: none"> 1. Count the customers with grades above Amritsar's average. 2. Find the name and numbers of all salesmen who had more than one customer. 3. List all salesmen and indicate those who have and don't have customers in their cities (Use UNION operation.) 4. Create a view that finds the salesman who has the customer with the highest order of a day. 5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.
12.	<p>Write a PL/SQL code to add two numbers and display the result. Read the numbers during run time.</p>
13.	<p>Write a PL/SQL code to find sum of first 10 natural numbers using while and for loop.</p>
14.	<p>Write a program to create a trigger which will convert the name of a student to upper case before inserting or updating the name column of student table.</p>
15.	<p>Write a PL/SQL block to count the number of rows affected by an update statement using SQL% ROWCOUNT</p>

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16.	Write a PL/SQL block to increase the salary of all doctors by 1000.
17.	Write a PL/SQL code to multiply two numbers using procedure inside the block.
18.	Write a PL/SQL code to calculate factorial of a given number using function.
19.	Create a package that contains function and procedure.
20.	Design database for Student Management System for your college using E-R model and Normalization.
21.	Design and Develop Conceptual Data Model (E-R Diagram) for Library Management System with all the necessary entities, attributes, constraints and relationships. Design and build Relational Data Model for application specifying all possible constraints.

Reference Books:

1. “SQL, PL/SQL the Programming Language of Oracle”, 4th Revised Edition, Ivan Bayross (2009).
 2. “Oracle PL/SQL Programming”, 5th Edition, Steven Feuerstein and Bill Pribyl (2009).
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Course Name: Image Editing & Photography

Course Code: UGWD1907

Program: B.Sc. (Graphics and Web Designing)	L: 1 T: 0 P: 0
Branch: Computer Applications	Credits: 1
Semester: 3 rd	Contact hours: 16 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Skill Enhancement

Prerequisite: --Students must have basic knowledge of Camera and Photoshop.

Co requisite: --NA

Additional material required in ESE:--

Course Outcomes: Students will be able to

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B.Sc. (Graphics and Web Designing)

CO#	Course Outcomes
CO1	Know about the basic functions and features of digital camera
CO2	Learn the various formats of camera and functioning of SLR camera and its controls such that they can handle it well and get correct exposure for their photographs.
CO3	Have a clear understanding of describe image quality and will able to enhance it.
CO4	Familiarize themselves with the vitality of the subjects and develop their sensibility to a certain minimum extent

Detailed contents	Contact hours
<u>UNIT-I</u> Camera Controls: Introductions of camera: its parts and types. Menu items and shooting modes (Auto vs. Scene vs. Priority). Exposure, Black and White Conversion, Intro to Lighting Black and White photographs angle and their conceptual editing - Black & White conversion practice Exposure compensation. Concept of high- and low key Studio session.	4 hours
<u>UNIT-II</u> The Portrait: Introduction of Portrait Image and its types. Discussion of portrait genres and lighting techniques (studio, natural) Review aperture, shutter speed, ISO. Practice editing and cropping. Composition tips, and Shooting: Composition tips and photography shooting methods. Night/Day photography and low light shooting and there difference.	4 hours
<u>Unit –III</u> Conceptual Photography and Contemporary Art: Photography Methods for conceptual click. Contemporary art shoot and editing techniques. Creating a Body of Work: Sequence editing Trouble shooting with editing.	4 hours

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B.Sc. (Graphics and Web Designing)

<u>UNIT-IV</u> Basics of Editing: Introduction to Editing, fixing blemishes, color correcting and selective edits. Output: Ready images for final output. Web vs. print. Color space conversion.	4 hours
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Text books:

1. The Art of Photography: A Personal Approach to Artistic Expression, Bruce Barnbaum, 2nd Edition, 2017.

Reference Books:

1. Tate - The Photography Ideas Book, Lorna Yabsley, 2019.

Course Name: Image Editing & Photography Laboratory

Course Code: UGWD1908

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 1
Semester: 3rd	Contact hours: 2 hours per week
Internal max. marks: 20	Theory/Practical: Practical
External max. marks: 30	Duration of end semester examinations (ESE):
Total marks: 50	Elective status: Skill Enhancement Course

Prerequisite: --Student must have the basic knowledge of CorelDraw and Photoshop.

Co requisite: --NA

Additional material required:-- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO#	Course Outcomes
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

CO1	Handle photography related to above mention subjects and shall be able to edit or fine tune their photographs using software.
CO2	Learn about in depth knowledge of using Photoshop's various tools and techniques.
CO3	Learn about vector software illustrator and its different tools and techniques.
CO4	Feel conversant with the terminology used while discussing exposures and lighting conditions.

Instructions:-

1.	Assignment on lighting techniques for product photography and portrait photography.
2.	Assignment on photo shoots (Exposure, Role of different focal lengths, Visual Composition).
3.	Assignment on clicking the photos from different genres.
4.	Assignment on digital workflow (Editing the image in the software).
5.	Assignment on working with strobe lights & on-camera Flash.
6.	Assignment on detailed understanding of exposure metering.
7.	Assignment on digital workflow (Digital black and white photography).
8.	Assignment on High Dynamic Range (HDR Photography).
9.	Assignment on studio photography techniques (post shoot processing of photographs).
10.	Assignment on the submission of Theme/Project based campaign .
11.	Assignment on the submission of Studio Portraits.
12.	Assignment on the submission of Product Photographs shot in studio.
13.	Assignment on the submissions of outdoor HDR Photographs.
14.	Assignment on the submissions architectural and interior photography shoot.

Text Books:

- 1: Scott Kelby "Peachpit Press Book: The Digital Photography Book, Part 1"
Second Edition – 2013.

Reference Books:

1. Raghu Rai "People: His Finest Portraits" Aleph Book Company, 2016.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Programming in Python

Course Code: UGCA1914

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 Hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite:-Student must have the basic knowledge of C++ programming

Co requisite:--NA

Additional material required in ESE:-

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Familiar with Python environment, data types, operators used in Python.
CO2	Compare and contrast Python with other programming languages.
CO3	Learn the use of control structures and numerous native data types with their methods.
CO4	Design user defined functions, modules, and packages.
CO5	Create and handle files in Python

etailed Contents	Contact hours
<p><u>UNIT-I</u></p> <p>Introduction to Python Programming Language: Programming Language, History and Origin of Python Language, Features of Python, Limitations, Major Applications of Python, Getting, Installing Python, Setting up Path and Environment Variables, Running Python, First Python Program, Python Interactive Help Feature, Python differences from other languages.</p> <p>Python Data Types & Input/ Output: Keywords, Identifiers, Python Statement, Indentation, Documentation, Variables, Multiple Assignment, Understanding Data Type, Data Type Conversion, Python Input and Output Functions, Import command.</p> <p>Operators and Expressions: Operators in Python, Expressions, Precedence, Associativity of Operators, Non Associative Operators.</p>	12

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<p><u>UNIT-II</u></p> <p>Control Structures: Decision making statements, Python loops, Python control statements.</p> <p>Python Native Data Types: Numbers, Lists, Tuples, Sets, Dictionary, Functions&MethodsofDictionary,Strings(indetailwiththeirmethodsand operations).</p>	10
<p><u>UNIT-III</u></p> <p>Python Functions: Functions, Advantages of Functions, Built-in Functions, and User defined functions, Anonymous functions, Pass by value Vs. Pass by Reference, Recursion, Scope and Lifetime of Variables.</p> <p>Python Modules: Module definition, Need of modules, Creating a module, Importing module, Path Searching of a Module, Module Reloading, Standard Modules, Python Packages.</p>	12
<p><u>UNIT-IV</u></p> <p>Exception Handling: Exceptions, Built-in exceptions, Exception handling, User defined exceptions in Python.</p> <p>File Management in Python: Operations on files (opening, modes, attributes, encoding, closing), read () & write () methods, tell() & seek() methods, renaming & deleting files in Python, directories in Python.</p> <p>Classes and Objects: The concept of OOPS in Python, Designing classes, Creating objects, Accessing attributes, Editing class attributes, Built-in class attributes, Garbage collection, Destroying objects.</p>	10

Text Books:

1. Programming in Python, Pooja Sharma, BPB Publications, 2017.
2. Core Python Programming, R. Nageswara Rao, 2nd Edition, Dreamtech.

Reference Books:

1. Python, The complete Reference, Martin C. Brown, Mc Graw Hill Education.
 2. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.
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Course Name: Animation Art

Course Code: UGWD1909

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Program: B.Sc. in Graphics and Web Designing	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite Student must have the basic knowledge of Sketching & Drawing.

Co requisite: NA.

Additional material required in ESE:

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Learn the different mediums of Drawing and its importance for animation.
CO2	Know about the different medium and techniques of drawing pencils and painting brushes.
CO3	Draw landscape with proper sketching sense, draw trees, plants, buildings, sky and to create the animation backgrounds.
CO4	Learn about the light and shadow and surface and texture sketching.

Detailed contents	Contact hours
<u>UNIT-I</u> Starting with the tools for drawing: Types of pencils:- (HB, B, 2B,4B, 6B,8B, 10B, 12B), Charcoal Pencil, Clutch Pencil. Sheets:- Cartridge, Hand Made, Ivory, Art Card, duplex, News Print, Mount board sheet etc. Colors:- Poster color, Water Color, Pastel color, Pencil Color, waterproof ink. Brushes:- Round and Flat	12 hours

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B.Sc. (Graphics and Web Designing)

Object Drawing: Principles of object drawing, Draw common shapes, forms on a Two-Dimension (2D) surface with geometry - structure, surface and texture, perspective and points of view, Knowing about line and make effects that can build, definition of light and shadow on objects and an assignment.	
<u>UNIT-II</u> Rendition of the effect of light on simple forms and objects mood changing, quality of surface, solidity, drama, and impact. Viewpoint Drawing: Viewpoint Drawing. Theory of viewpoint, one point and two point perspective as applied to objects, furniture, interior and exteriors of the buildings, study of light and shade etc.	10 hours
<u>Unit –III</u> Study of Living World : Drawing from Nature, Location drawing and learning to represent trees, plants, bushes, shrubs, insects, birds, and animals with attention to structure and morphology, proportion, volume, and behavior.	12 hours
<u>UNIT-IV</u> Human Creativity: Explanation to human figure drawing –Drawings from Mannequin, Sketching of person figure from outside as well as inside. To know and catch the signs of the human form, weight, balance, Rhythm and proportion. Making Storyboard What is storyboard, usage of story board, drawing on storyboard, understand and draw movements of camera in story board.	10 hours

Text books:

1. The Complete Book of Drawing Techniques: A Complete Guide for the Artist, Peter Stanyer, Arcturus Publishing, 2004.

Reference books:

1. Drawing for the Absolute and Utter Beginner, Watson- Guptill, 2018.
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**I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)**

Course Name: Computer Graphics

Course Code: UGCA1934

Program: B.Sc. (Graphics and Web Designing)	L:3 T:1 P:0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 Hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): --
Total marks: 100	Elective status: Core

Prerequisite:-

Co requisite:--

Additional material required in ESE:-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Let students understand basics of Computer Graphics, Input/output primitive and basic transformations, which can be applied on objects of graphics.
CO2	To develop the logical and reasoning skills of the students.
CO3	Learn graphical primitives and their algorithms

Detailed contents	Contact hours
<p><u>UNIT-I</u></p> <p>Introduction to Computer Graphics Applications of Computer Graphics. Graphs and Types of Graphs</p> <p>Input Devices: Light Pens, Graphic Tablets, Joysticks, Track Ball, Data Glove, Digitizers, Image Scanner.</p> <p>Video Display Devices: Refresh Cathode Ray Tube, Raster Scan displays, Random Scan displays, Color CRT - monitors and Color generating techniques (Shadow Mask, Beam Penetration), Flat-Panel Displays; 3-D Viewing Devices, Graphics monitors and work stations, Color Models (RGB and CMY), Lookup Table.</p> <p>Introduction Virtual Reality & Environments: Applications in Engineering, Architecture, Education, Medicine, Entertainment, Science, Training.</p>	12

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B.Sc. (Graphics and Web Designing)**

<u>UNIT-II</u> Scan-conversions Process and need of Scan Conversion, Scan conversion algorithms for Line, Circle and Ellipse using direct method, Bresenham's algorithms for line & circle and Midpoint Ellipse Algorithm along with their derivations, Area Filling Techniques, Flood Fill Techniques, Character Generation.	10
<u>UNIT-III</u> 2 – Dimensional Graphics Cartesian and need of Homogeneous co-ordinate system, Geometric transformations (Translation, Scaling, Rotation, Reflection, Shearing), Viewing transformation and clipping (line, polygon and text) using Cohen-Sutherland, Sutherland Hodgeman and Liang Barsky algorithm for clipping.	12
<u>UNIT-IV</u> 3 – Dimensional Graphics Introduction to 3-dimensional Graphics: Geometric Transformations (Translation, Scaling, Rotation), Mathematics of Projections (Parallel & Perspective). Color Shading. Introduction to Morphing techniques.	10

Text Books:

1. D. Hearn and M.P. Baker, *Computer Graphics*, PHI New Delhi.
 2. J.D. Foley, A.V. Dam, S.K. Feiner, J.F. Hughes, R.L Phillips, *Computer Graphics Principles & Practices*, Second Edition, Pearson Education, 2007.
 3. R.A. Plastock and G. Kalley, *Computer Graphic*, McGraw Hill, 1986.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Programming in Python Laboratory

Course Code: UGCA1917

Program: B.Sc. (Graphics and Web Designing)	L:0 T:0 P:4
Branch: Computer Applications	Credits: 2
Semester: 4	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):- -
Total marks: 100	Elective Status: Core

Prerequisite: -

Co requisite:-- NA

Additional material required in ESE: - Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Solve simple to advanced problems using Python language.
CO2	Develop logic of various programming problems using numerous data types and Control structures of Python.
CO3	Implement different data structures using Python.
CO4	Implement modules and functions using Python.
CO5	Design and implement the concept of object oriented programming structures.
CO6	Implement file handling.

Instructions: All programs are to be developed in *Python* programming language.

1.	Compute sum, subtraction, multiplication, division and exponent of given variables input by the user.
2.	Compute area of following shapes: circle, rectangle, triangle, square, trapezoid and Parallelogram.
3.	Compute volume of following 3D shapes: cube, cylinder, cone and sphere.
4.	Compute and print roots of quadratic equation $ax^2+bx+c=0$, where the values of a, b, and c are input by the user.
5.	Print numbers up to N which are not divisible by 3, 6, 9,, e.g., 1, 2, 4, 5, 7,....
6.	Write a program to determine whether a triangle is isosceles or not?
7.	Print multiplication table of a number input by the user.
8.	Compute sum of natural numbers from one to n number.
9.	Print Fibonacci series up to n numbers e.g. 0 1 1 2 3 5 8 13.....n

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10.	Compute factorial of a given number.
11.	Count occurrence of a digit 5 in a given integer number input by the user.
12.	Print Geometric and Harmonic means of a series input by the user.
13.	Evaluate the following expressions: a. $x - x^2/2! + x^3/3! - x^4/4! + \dots x^n/n!$ b. $x - x^3/3! + x^5/5! - x^7/7! + \dots x^n/n!$
14.	Print all possible combinations of 4, 5, and 6.
15.	Determine prime numbers within a specific range.
16.	Count number of persons of age above 60 and below 90.
17.	Compute transpose of a matrix.
18.	Perform following operations on two matrices. 1) Addition 2) Subtraction 3) Multiplication
19.	Count occurrence of vowels.
20.	Count total number of vowels in a word.
21.	Determine whether a string is palindrome or not.
22.	Perform following operations on a list of numbers: 1) Insert an element 2) delete an element 3) sort the list 4) delete entire list
23.	Display word after Sorting in alphabetical order.
24.	Perform sequential search on a list of given numbers.
25.	Perform sequential search on ordered list of given numbers.
26.	Maintain practical note book as per their serial numbers in library using Python dictionary.
27.	Perform following operations on dictionary 1) Insert 2) delete 3) change
28.	Check whether a number is in a given range using functions.
29.	Write a Python function that accepts a string and calculates number of upper case letters and lower case letters available in that string.
30.	To find the Max of three numbers using functions.
31.	Multiply all the numbers in a list using functions.
32.	Solve the Fibonacci sequence using recursion.

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33.	Gets the factorial of a non-negative integer using recursion.
34.	Write a program to create a module of factorial in Python.
35.	Design a Python class named Rectangle, constructed by a length & width, also design a method which will compute the area of a rectangle.
36.	Design a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
37.	Design a Python class to reverse a string 'word by word'.
38.	Write a Python program to read an entire text file.
39.	Design a Python program to read first n lines of a text file.
40.	Construct a Python program to write and append text to a file and display the text.

Text Books:

1. Programming in Python, Pooja Sharma, BPB Publications, 2017.
2. Core Python Programming, R. Nageswara Rao, 2nd Edition, Dreamtech.

Reference Books:

1. Python, The complete Reference, Martin C. Brown, Mc Graw Hill Education.
 2. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, O'REILLY.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Animation Art Laboratory

Course Code: UGWD1910

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):
Total marks: 100	Elective status: Core

Prerequisite:--Student must have the basic knowledge of sketching.

Co requisite:-- NA.

Additional material required in ESE:- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Create basic shapes and forms on a two-dimensional surface using geometry.
CO2	Learn observation, visualization and visually experiencing the content.
CO3	Study about human figure for character drawing.

Instructions:

1	Assignment on sketching by using Drawing pencils:- (HB, B, 2B,4B, 6B,8B, 10B, 12B), Charcoal Pencil, Clutch Pencil.
2	Assignment on drawing scenery by using colors (poster color, Water Color, Pastel color, Pencil Color, waterproof ink).
3	Assignment on poster designs with shades by using sheets (Cartridge, Hand Made, Ivory, Art Card, duplex, News Print, Mount board sheet etc.).
4	Assignment on Round and Flat brush painting.
5	Assignment on design based on geometry - structure, surface and texture.

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6	Assignment on light and shadow on objects and an assignment.
7	Assignment on design based on objects mood changing, quality of surface, solidity, drama, and impact.
8	Assignment on one point and two point perspective.
9	Assignment on furniture, interior and exteriors of the buildings Designs.
10	Assignment on drawing Nature & Location scene.
11	Assignment on Design based on light and shade of the pencils and brushes.
12	Drawing assignment on Nature, Location drawing, trees, plants, bushes, shrubs, insects, birds, and animals.
13	Assignment on drawings from Mannequin, Sketching of person figure from outside as well as inside.
14	Assignment on drawing on storyboard, understand and draw movements of camera in story board.

Test books:

1. Drawing for the Absolute Beginner: A Clear & Easy Guide to Successful Drawing (Art for the Absolute Beginner), Mark Willenbrink, 2006.

Reference books:

1. Sketching for Animation: Developing Ideas, Characters and Layouts in Your Sketchbook, Peter Parr, Fairchild Books, 2016.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Computer Graphics Laboratory

Course Code: UGCA 1940

Program: B.Sc. (Graphics and Web Designing)	L:0 T:0 P:4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): --
Total marks: 100	Elective status: Core

Prerequisite: --

Co requisite: -- NA

Additional material required in ESE:- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	To equip students with techniques for developing structured computer Program.
CO2	Learn the basic knowledge of computer graphics
CO3	Develop the logical and reasoning skills
CO4	Learn about the Practical applications of graphics, Program development and basic Animations without using graphical software.

Instructions:

1.	Use of basic functions of graphic available like circle, put pixel, rectangle, arc, ellipse, flood fill, set color etc.
2.	Design a logo/poster using primitive functions.
3.	Draw a 3 D object using palettes.
4.	Line Drawing Algorithm : Direct method and DDA
5.	Bresenham's Line Drawing Algorithm
6.	Circle Generating Algorithm : Equation and trigonometric function.
7.	Bresenham's Circle Generating Algorithm
8.	Draw an ellipse using Midpoint Algorithm.
9.	Translation transformation on a polygon.
10.	Scaling transformation on a polygon.
11.	Rotation transformation on a polygon.
12.	Reflection transformation on a polygon.
13.	Shearing transformation on a polygon.
14.	Mixed transformation on an object

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15.	Minor project (eg. Game/ Animation etc.)
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Text Books:

1. D. Hearn and M.P. Baker, *Computer Graphics*, PHI New Delhi.
2. J.D. Foley, A.V. Dam, S.K. Feiner, J.F. Hughes, R.L Phillips, *Computer Graphics Principles & Practices*, Second Edition, Pearson Education,2007.

Reference Books:

1. R.A. Plastock and G. Kalley, *Computer Graphic*, McGraw Hill,1986.
 2. Mark Lutz, *Learning Python*,O'REILY
 3. Pooja Sharma, *Programming in Python*,BPB
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Course Name: Video Editing

Course Code: UGWD1911

Program: B.Sc. (Graphics and Web Designing)	L: 1 T: 0 P: 0
Branch: Computer Applications	Credits: 1
Semester: 4 th	Contact hours: 16 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester examinations (ESE): 3hrs
Total marks: 100	Elective status: Skill Enhancement Course

Prerequisite: Students must have basic understanding of Photoshop and Designing.

Co requisite: NA

Additional material required in ESE:

Course outcomes: Students will be able to

CO#	Course outcomes
CO1	Create different moods using various sounds, which will further help them integrate the same into their film projects.
CO2	Know about editing basics, tools and broadcast system.
CO3	Knowledge of working with footages in an editing software.

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Detailed contents	Contact hours
<u>UNIT-I</u> Sound- Introduction to Audio, interrelationship between sound, culture and media theory.Ear Training, Critical listening, Role of sound in film, Storytelling through sound, Sound editing, working with Dialogue.	4 hours
<u>UNIT-II</u> Mixing- The mixing process, Monitoring basics of mixing, Basic Mixing Rules and techniques, Equalizing, Audio equipment, Studio Production Techniques, Effects introduction, overview, compression.	4 hours
<u>Unit -III</u> Audio Formats - Digital and Analogue practical assignments and practice, Mastering -Introduction to mastering - Mastering setups – Monitoring (The whole practice will be done practically).	4 hours
<u>UNIT-IV</u> Voiceover -The art of voiceover, how to lend voice to a short film, Voice modulation, voice sync. Submission -Design a sound track for a short film.	4 hours

Text books:

1. The Technique of Film and Video Editing: History, Theory, and Practice, 6th Edition, Ken Dancyger, Routledge Publishers, 2018.
2. Adobe Premiere Pro Bible, 1st edition, Adele Droblas, John Wiley & Sons, 2003.

Reference Books:

1. Editing Digital Video (Digital Video and Audio Series, Robert Goodman & Patrick McGrath, McGraw-Hill Education, 2002.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Video Editing Laboratory

Course Code: UGWD1912

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 1
Semester: 4 th	Contact hours: 2 hours per week
Internal max. marks: 20	Theory/Practical: Practical
External max. marks: 30	Duration of end semester examinations (ESE):
Total marks: 50	Elective status: Skill Enhancement Course

Prerequisite: Students must have basic understanding of Photoshop and Designing.

Co requisite: NA

Additional material required in ESE: Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course outcomes: Students will be able to

CO#	Course outcomes
CO1	Render out final films using appropriate compressors and formats.
CO2	Know about the video editing in frames with time setting.
CO3	Know about working, editing and synchronization of sound with footages
CO4	Students will know about the time durations of the video and rendering.

Instructions:

1.	Assignment on creating one short video footage by using basic functions of the software
2.	Assignment on designing a background, text and colors editing in video
3.	Assignment on editing a video by using a time in frames
4.	Assignment based on the mixing of 2 or more videos.

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5.	Assignment based on Audio equipment, Studio Production Techniques
6.	Assignment based on effects introduction, overview, compression
7.	Assignment based on Audio Formats - Digital and Analogue practical assignments and practice
8.	Assignment based on mastering setups – Monitoring the sound, background
9.	Assignment based on video editing by adding Voiceover
10.	Assignment based on voice modulation, voice synchronization
11.	Assignment based on design a sound track for a short film.

Text Books:

1. Film Editing: Great Cuts Every Filmmaker and Movie Lover Must Know, GaelChandler , Michael Wiese Productions, 2009.

Reference Books:

1. Cut by Cut: Editing Your Film or Video, Gael Chandler, Michael WieseProductions, 2004.
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**** Guidelines regarding Mentoring and
Professional Development**

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.
3. Evaluation shall be based on rubrics for Part – A & B
4. Mentors/Faculty in charges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Programming in PHP

Course Code: UGCA1929

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: Student must have the basic knowledge of HTML, C++ and Java.

Co requisite: NA

Additional material required in ESE:

Course Outcomes: Students will be able to

CO1	Learn the environment of Server Side Script.
CO2	Compare and contrast between Client Side Script & Server Side Script.
CO3	Learn the use of control structures and numerous native data types with their methods.
CO4	Make Database connectivity between Front End and Back End.
CO5	Develop Dynamic Website that can interact with different kinds of Database Languages.

Detailed contents	Contact hours
Unit-I Introduction to PHP Evolution of PHP & its comparison Interfaces to External systems, Hardware and Software requirements, PHP Scripting. Basic PHP Development, Working of PHP scripts, Basic PHP syntax, PHP data types. Displaying type information: Testing for a specific data type, Changing type with Set type, Operators, Variable manipulation, Dynamic variables and Variable scope.	10
Unit-II Control Statements: if() and elseif() condition Statement, The switch statement, Using the? Operator, Using the while() Loop, The do while statement, Using the for() Loop, Breaking out of loops, Nesting loops. Functions: Function definition, Creation, Returning values, User-defined functions, Dynamic function, Function calls with the static statement, default arguments, Passing arguments to a function by value. String Manipulation: Formatting String for Presentation, Formatting String for Storage, Joining and Splitting String, Comparing String, Matching and replace Substring. Array: Anatomy of an Array, Creating index based and Associative array, Accessing array Elements, Looping with Index based array, Looping with associative array using each() and foreach() loops, Library functions.	10

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Unit-IIIForms Working with Forms, Super global variables, Super global array,Importing user input, Accessing user input, Combine HTML and PHP code, Using hidden fields, Redirecting the user. Working with File and Directories Understanding file & directory, Opening and closing a file, Coping, renaming and deleting a file, Working with directories, File Uploading & Downloading. Generating Images with PHP: Basics computer Graphics, Creating Image.	9
Unit-IV Database Connectivity with MySql Introduction to RDBMS, Connection with MySql Database, Performingbasic database operation (DML) (Insert, Delete, Update, Select).	4

Text Books:

PHP: The Complete Reference, “Steven Holzner” , Tata McGraw Hill.

Programming PHP, “Kevin Tetroi” , O' Reilly.

Robin Nixon, Learning PHP, MySQL, and JavaScript, Shroff/O'Reilly.

E-Books/ Online learning material:

https://www.tutorialspoint.com/php/php_tutorial.pdf

<https://www.w3schools.com/php/>

<https://education.fsu.edu/wp-content/uploads/2015/04/Learning-PHP-MySQL- JavaScript-and-CSS-2nd-Edition-1.pdf>

Course Name: Multimedia 2D & 3D Designing

Course Code: UGWD1913

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: Student must have the basic knowledge of Photoshop & Graphic Designing.

Co requisite: NA

Additional material required in ESE:

Course Outcomes: Students will be able to

CO1	Learn the tools and processes required to create simple animation of cartoons.
CO2	Create and animate any type of Graphic Design & cartoon in the software.
CO3	Gain the knowledge about tools and interface of 2D & 3D animation software.

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CO4	Learn about the mechanics of motion.
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Detailed contents	Contact hours
UNIT-I Introduction: An introduction of the various drawing and painting software tools and their uses and procedures. Working with timeline, key frames and frame rate. Shape Tween, Motion Tween and Symbols by using shape hints. Bitmaps, Masks, Text and Special Effects: Importing and modifying photos and bitmapped images.	8 hours
UNIT-II Character Animation and Inverse Kinematics Creating and animating armatures. Students will animate a Walk cycle. Sound, Layout and Final Production: Importing sound files. Cuing and synchronizing sound with timeline animation. Lip-syncing to dialogue. Scene layout procedures and proper scene set up in preparation of final production.	8 hours
UNIT –III Character Animation: Explaining gestures, Role of expression, emotion in acting and animation. Introductory exercises: creativity, ideas, inspiration for stories, acting methods. Getting into character: Acting exercises that illustrate personality and character. Situations & character-driven scenarios. Focus on Shape, Postures, Gestures & key poses.	8 hours
UNIT-IV Working with the recorded voice: Accents, dialects, mouth movements & facial expressions: characterization & performance choices dialogue in Animation. Introduction timing and spacing: Directing skills, acting exercise, Timing for Acting how Timing is a very important principle for not only creating believable movements but also for creating more appealing in your animations.	9 hours

Text Book:

Cartoon Animation: (Collector's Series), Preston Blair, Walter Foster, 1994.

Reference Book:

The Complete Digital Animation Course: The Principles, Practice and Techniques of Successful Digital Animation, Andy Wyatt, Thames & Hudson, 2010.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Lighting and Rendering
Course Code: UGWD1914

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Skill Enhancement

Prerequisite: --Students must have basic knowledge of Photoshop & Premiere Pro.

Co requisite: --NA

Additional material required in ESE:--

Course Outcomes: Students will be able to

CO1	Learn about the available lights in software for character designing.
CO2	Experiment with lighting using interior and exterior scenes.
CO3	Get a hand on experience of creating moods with lights.
CO4	Get clear idea of the rendering process of animation.

Detailed contents	Contact hours
UNIT-I Fundamental of Lighting Tools and light behavior: How light works in real world and difference between light in Real world &CG work space. Introduction of light properties, moods. Maya Shaders Working with Shader - Working with Shader Properties - Ambient, Diffuse,Specular, Shininess etc.	8 hours
UNIT-II Lighting in CG: Type of Light- Ambient Light, Directional Light, Point Light, Spot light, Area Light, Volume light, Common attributes of lights- Type, Color, Intensity, Illuminates by Default, Emit Diffuse and Emit Specular, Working with spot light- Decay rate, Working on Shadows, Depth Map and RetracingShadows, Shadow Intensity and Color, Linking and Unlinking Lights.	8 hours
UNIT –III Three Point light setup. Mental Ray Light- mia_photometric light,mia_physicalsun, mia_portal light etc. Rendering: Render Setup- Choosing a Filename, Image Format, Frame Range, Camera, Setting Resolution, Selecting a Render Engine, Render Quality, Render ViewWindow- Saving/Loading an Image, Keeping/Removing Image.	8 hours

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UNIT-IV Introduction to Lighting, Mental Ray Physical Sun and Sky, Reflection and Refractions: Vector and Mental Ray, Mental Ray Settings, Global Illumination, Image Based Lighting, Mental Ray Physical Sun and Sky, Reflection and Refractions, Quality Settings- Sampling Mode, Number of Samples, Anti- aliasing Contrast, Multi-Pixel Filtering Heading, Sample Options, Caustics and Photons.	9 hours
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Text Book:

1. Introducing Autodesk Maya 2014, Dariush Derakhshani, Wiley, 2013.

Reference Book:

1. Mastering Autodesk Maya 2012, Todd Palamar, Wiley India Private Limited, 2011.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Programming in PHP Laboratory

Course Code: UGCA1930

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5th	Contact hours: 2 hours per week
Internal max. marks: 30	Theory/Practical: Practical
External max. marks: 20	Duration of end semester examinations (ESE): 3hrs
Total marks: 50	Elective status: Core

Prerequisite: Student must have the basic knowledge of Coding Languages.

Co requisite: NA

Additional material required in ESE: Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course outcomes: Students will be able to

CO1	Solve simple to advanced online problems of Web Pages.
CO2	Develop logics of various programming problems using numerous data types and control structures.
CO3	Client Server concepts, Static & Dynamic environment of the websites etc.
CO4	Design and implement the concept of Database connectivity.

Instructions:

1.	Take values from the user and compute sum, subtraction, multiplication, division and exponent of value of the variables.
2.	Write a program to find area of following shapes: circle, rectangle, triangle, square, trapezoid and parallelogram.
3.	Compute and print roots of quadratic equation.
4.	Write a program to determine whether a triangle is isosceles or not?
5.	Print multiplication table of a number input by the user.
6.	Calculate sum of natural numbers from one to n number.
7.	Print Fibonacci series up to n numbers e.g. 0 1 1 2 3 5 8 13 21.....n
8.	Write a program to find the factorial of any number.
9.	Determine prime numbers within a specific range.

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10.	Write a program to compute, the Average and Grade of students marks.
11.	Compute addition, subtraction and multiplication of a matrix.
12.	Count total number of vowels in a word “Develop & Empower Individuals”.
13.	Determine whether a string is palindrome or not?
14.	Display word after Sorting in alphabetical order.
15.	Check whether a number is in a given range using functions.
16.	Write a program accepts a string and calculates number of upper case letters and lower case letters available in that string.
17.	Design a program to reverse a string word by word.
18.	Write a program to create a login form. On submitting the form, the user should navigate to profile page.
19.	Design front page of a college or department using graphics method.
20.	Write a program to upload and download files.

Reference Books:

PHP: The Complete Reference, “Steven Holzner” , January 1, 2007. Tata McGraw- Hill Education.

Programming PHP, “Kevin Tetroi”, O' Reilly.

Published by Wiley Publishing, Inc. 10475 Crosspoint Boulevard Indianapolis, IN 46256

E-Books/ Online learning material:

[http://cs.petrus.ru/~musen/php/2013/Books/Beginning%20PHP%205.3%20by](http://cs.petrus.ru/~musen/php/2013/Books/Beginning%20PHP%205.3%20by%20Matt%20Doyle.pdf)

[%20Matt%20Doyle.pdf](http://cs.petrus.ru/~musen/php/2013/Books/Beginning%20PHP%205.3%20by%20Matt%20Doyle.pdf)

<https://www.w3schools.com/php/>

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Multimedia 2D & 3D Designing Laboratory
Course Code: UGWD1915

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester examinations (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Student must have the basic knowledge of Maya & Photoshop.

Co requisite: NA

Additional material required in ESE: Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course outcomes: Students will be able to

CO1	Learn about critical principles of animation like size and overlapping action.
CO2	Know about technical skills needed and support character animations for all 2D & 3D Animation.
CO3	Learn to animate the character the recorded voice in animation.
CO4	Learn about timing and spacing in animation

Instructions:

1.	Assignment on Adding life to characters using expressions.
2.	Assignment on character eye movements, blinking, talking, and making various gestures.
3.	Assignment on animate a character to depict a perfect normal human walk and run
4.	Assignment on human walk and run cycle with appropriate movement from head to toe.
5.	Assignment on character to perform an action – Kicking a football - Jump over a small ditch/hole, Climbing a wall – Opening a door, going out & then closing the door.
6.	Assignment on character animation with perfect gestures, role of expression, emotion in acting.
7.	Assignment on shape, Postures, Gestures & key poses of animation object.

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8.	Assignment on creating short animation scene by adding Accents, dialects, mouth movements & facial expressions.
9.	Assignment on adding time frame keys in animation.
10.	Assignment on creating design by mixing of Primary, Secondary and Tertiary Colors.
11.	Assignment on text and as image combined with animate cartoons.

Text Book:

Timing for Animation, Harold Whitaker, CRC Press, 2009.

Reference Book:

1. Basics Animation: Digital Animation, Andrew Chong, Bloomsbury Publishing India Private Limited, 2007.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Lighting and Rendering Laboratory
Course Code: UGWD1916

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 2 hours per week
Internal max. marks: 20	Theory/Practical: Practical
External max. marks: 30	Duration of end semester examinations (ESE):
Total marks: 50	Elective status: Skill Enhancement Course

Prerequisite: -- Students must have basic knowledge of Photoshop & Graphic Designing.

Co requisite: --NA

Additional material required:-- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO1	Gain the knowledge of using GI, FG, IBL, Raytraced reflections and refractions.
CO2	Learn about character designing and animation.
CO3	Learn about adding voice, songs and objects in the animation.
CO4	Know about the time and space in the animation.

Instructions:-

1.	Assignment on lighting techniques in the animation.
2.	Assignment on designing cartoon with hand and eye movements.
3.	Assignment on Ambient & Diffuse animation.
4.	Assignment on lights (Ambient Light, Directional Light, Point Light, Spot light, Area Light, Volume light)
5.	Assignment on working with type of characters, Color & Intensity.
6.	Assignment on animation by adding spot light- Decay rate, Cone Angle, Penumbra Angle, Drop-off, aiming lights.
7.	Assignment on digital workflow (Digital black and white photography).
8.	Assignment on Working on Shadows, Depth Map and Retracing Shadows.
9.	Assignment on Lighting an Interior Scene.
10.	Assignment on Render Setup with Image Format, Frame Range, Camera, Setting Resolution, Selecting a Render Engine, Render Quality.

Text Book:

1: Advanced Maya Texturing and Lighting, Lee Lanier, Second Edition, Wiley Publishing Inc.

Reference Book:

1. Exploring Autodesk Revit 2017 for Structure, Sham Tickoo/TIET, BPB publisher, 2017

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.
3. Evaluation shall be based on rubrics for Part – A & B
4. Mentors/Faculty in-charges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Elective - I

Course Name: Cloud Computing

Course Code: UGCA1936

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: Student must have the basic knowledge of Coding Languages.

Co requisite: NA

Additional material required in ESE:

Course Outcomes: Students will be able to

CO1	Learn the ability to understand the basic concept and importance of cloud computing.
CO2	Access the suitability of migrating to a cloud solution for different applications.
CO3	Compare and evaluate the virtualization technologies.
CO4	Ability to monitor and manage the cloud resources, applications and data while addressing the security concerns.

Detailed contents	Contact hours
Unit-I Overview of Computing Paradigm: Recent trends in Computing -Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing. Introduction to Cloud Computing: Vision of Cloud Computing, Defining a Cloud, Cloud delivery Model, Deployment Model, Characteristics, Benefits of Cloud Computing, Challenges ahead. Cloud computing vs. Cluster computing vs. Grid computing. Migrating into a Cloud: Introduction, Broad approaches to Migrating into the Cloud, The Seven-Step Model of Migration Into a Cloud.	9
Unit-II Virtualization: Introduction, Characteristics of Virtualized environment, Taxonomy of Virtualization techniques, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Hypervisor Technology Examples- Xen, VMware, Microsoft Hyper-V. Capacity Planning: Elasticity vs Scalability, Introduction, Defining Baseline and Metrics-Baseline Measurements, System Metrics, Load Testing, Resource Ceilings, Server and Instance types; Network Capacity, Scaling.	8

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Unit-III SLA Management in Cloud Computing: Inspiration, Traditional Approaches to SLO Management, Types of SLA, Life Cycle of SLA, SLA management in Cloud. Automated Policy-based management. Securing Cloud services: Cloud Security, Securing Data- Brokered CloudStorage Access, Storage location and tenancy, Encryption, Auditing and compliance. Steps to ensure security over cloud.	8
Unit-IV Cloud Platforms in Industry: Amazon Web Services-Compute Services, Storage Services, Communication Services, Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life Cycle. Cost Model. Microsoft Azure-Azure Core Concepts, SQL Azure, Windows Azure Platform Appliance.	8

Text Books:

Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, and Thamarai Selvi, Tata McGraw Hill, ISBN-13: 978-1-25-902995-0, New Delhi, India, Feb 2013.
 Cloud Computing Bible, Barrie Sosinsky, Wiley India Pvt. Ltd, ISBN-13: 978- 81-265-2980-3, New Delhi, India, 2011.
 Cloud Computing: Principles and paradigms, Raj Kumar Buyya, James Broberg, Andrezei M. Goscinski, Wiley India Pvt. Ltd, ISBN-13: 978-81-265-4125-6, New Delhi, India, 2011

Reference Books:

Cloud Computing for Dummies, Fern Halper, Hurwitz, Robin Bloor, Marcia Kaufman, Wiley India Pvt. Ltd, ISBN-13: 978-0-47-0597422, New Delhi, India, 2011.
 Dr. Saurabh Kumar, Cloud Computing: Insights into New-Era Infrastructure, Wiley India Pvt. Ltd, ISBN-13: 978-8-12-6528837, New Delhi, India, 2011.

E Books/ Online learning material

P.D. Kaur, I. Chana, Unfolding the distributed computing paradigm, in: Proceedings of the IEEE International Conference on Advances in Computer Engineering, ACE, Bangalore, Karnataka, India, 2010, pp. 339–342.
 P. Mell and T. Grance, “The NIST definition of cloud computing (draft), NIST Spec. Publ. 800 (2011) 7.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Linux Operating System
Course Code: UGCA1935

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 60%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: Operating System

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After completing this course, students will be able to:

CO1	Discuss the evolution of Open Source operating systems.
CO2	Operate open source operating system like Linux.
CO3	Create scripts in Linux.
CO4	Implement advanced concepts using open source operating system.

Detailed contents	Contact hours
Unit-I Introduction to Linux History of Linux & Unix, Overview of Linux Operating System, structure ofLinux Operating system, Installation. Desktops (The X window System, GNOME, KDE), desktop operations.Different types of editors, vi editor and its command.	9
Unit-II Shells and Utilities Role of shells in the Linux environment, Different types of shells in Linux Operating system, Shell configuration: Shell initialization & configuration directories & file, Aliases, Filename expansion, Standard Input/ Output & Redirection, Pipes, Managing Jobs. Shell Scripting: Different types of statements in shell script, variables in shell, assign values to shell variables, Default shell variables value, Rules for Naming variables, Display the value of shell variables Getting User writing simple shell scripts to accept input from the user and display a message on screen, Shell scripts to implement various control statements.	8

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Unit-III Files Systems & Linux Software Linux Files, File structure, commands for managing files & directories with other commonly used commands, Software Management, Office and Database Applications, Graphics Tools and Multimedia, Internet & Network services, Web, FTP & java Clients.	8
Unit-IV Linux Administration Managing users, Superuser Control, System Run levels, Managing File Systems, Kernel Administration: Linux kernel sources, rebuilding kernel,installing kernel, Virtualization, backup management.	8

Text Books:

1. Linux: The complete reference by Richard Petersen, Published by Tata McGraw-Hill Publication.
 2. Linux in a Nutshell: A Desktop Quick Reference, 6th Edition by Stephen Figgins,Arnold Robbins, Ellen Siever & Robert Love Published by O'Reilly Media.
 3. Linux Administration: A Beginner's Guide by Steve Shah & Wale Soyinka,Published by McGraw-Hill Education
 4. Unix Shell Programming by Yashavant P. Kanetkar, Published by BPBPublishers.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Artificial Intelligence

Course Code: UGCA1945

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 60%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: NA—

Co requisite: -NA-

Additional material required in ESE: -NA

Course Outcomes: Students will able to

CO1	Understand the significance and domains of Artificial Intelligence and knowledge Representation.
CO2	Examine the useful search techniques; learn their advantages, disadvantages and Comparison.
CO3	Understand important concepts like Expert Systems, AI applications.
CO4	Be exposed to the role of AI in different areas like NLP, Pattern Recognition etc.
CO5	Learn the practical applicability of intelligent systems, specifically its applications.

Detailed Contents	Contact hours
Unit-I Introduction- What is intelligence? Foundations of artificial intelligence (AI). History of AI. AI problems: Toy Problems, Real World problems- Tic-Tac-Toe, Water Jug, Question-Answering, 8-puzzle, 8-Queens problem. Formulating problems, Searching for Solutions. Knowledge Representation: Propositional Logic, Propositional Theorem Proving- Inference and Proofs, Proof by Resolution, Horn Clauses and definite Clauses, Forward and Backward chaining; First order Logic, Inference in First Order Logic.	8
Unit-II Uncertain Knowledge and Reasoning: Basic probability, Bayes rule, Belief networks, Default reasoning, Fuzzy sets and fuzzy logic. Structured Knowledge: Associative Networks, Frame Structures, Conceptual Dependencies and Scripts.	8
Unit-III Uninformed Search strategies- Breadth-first search, Uniform-cost search, Depth-first search, Depth-limited search, Iterative deepening depth-first search, Bidirectional search, Comparing uninformed search strategies. Informed (Heuristic) Search Strategies- Hill Climbing, Simulated Annealing, Genetic	8

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Algorithm, Greedy best-first search, A* and optimal search, Memory- bounded heuristic search.	
Unit-IV Natural language processing: Grammars, Parsing. Pattern Recognition: Recognition and Classification Process-Decision Theoretic Classification, Syntactic Classification; Learning ClassificationPatterns, Recognizing and Understanding Speech. Expert System Architectures: Characteristics, Rule-Based System Architectures, Nonproduction System Architectures, Knowledge Acquisition and Validation.	9

Text Books:

1. Artificial Intelligence-A Modern Approach, Russel and Norvig, Prentice Hall.
2. Artificial Intelligence, Elaine Rich, Kevin Knight and SB Nair, 3 Ed.,Tata McGraw-Hill.
3. Artificial Intelligence And Expert Systems, D.W.Patterson, Prentice Hall.
4. Artificial Intelligence Structures and Strategies for complex Problem Solving, George F. Luger, Pearson Addison Wesley.

Reference Books:

Artificial Intelligence-A New Synthesis, Nils J. Nilsson, Morgan Kaufmann Publishers.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Elective – I Laboratory

Course Name: Cloud Computing Laboratory

Course Code: UGCA1942

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5th	Contact hours: 4 hours per week
Internal max. marks: 30	Theory/Practical: Practical
External max. marks: 20	Duration of end semester examinations (ESE): 3hrs
Total marks: 50	Elective status: Core

Prerequisite: Working Knowledge of Linux Operating system

Co requisite: NA

Additional material required in ESE: Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course outcomes: Students will be able to

CO1	Learn the use of cloud computing tools offered by industry leaders.
CO2	Develop and deploy cloud applications using popular cloud platforms.
CO3	Configuration of the virtual machines on the cloud and building of a private cloud.

Instructions:

1.	Enlist various companies in cloud business and the corresponding services provided by them and tag them under SaaS , PaaS & IaaS.
2.	Create a warehouse application using tools supplied by any SaaS provider.
3.	Implementation of Para-Virtualization using VM Ware's Workstation/ Oracle's Virtual Box and Guest O.S. Learn creation, migration, cloning and managing of virtual machines.
4.	Using public cloud service providers tools for exploring the usage of IaaS, PaaS and SaaS cloud services.
5.	Setting up a private cloud using open source tools (Eucalyptus/Open Stack etc.).

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B.Sc. (Graphics and Web Designing)

Course Name: Linux Operating System Laboratory
Course Code: UGCA1941

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5th	Contact hours: 4 hours per week
Internal max. marks: 30	Theory/Practical: Practical
External max. marks: 20	Duration of end semester examinations (ESE): 3hrs
Total marks: 50	Elective status: Core

Prerequisite: Operating system

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will able to Learn

CO1	Installation & administration of Linux operating system
CO2	Implementing various services on Linux operating system.

Instructions:

1	Installation of Linux OS.
2	Writing advanced shell programs
3	Installation and management of printers
4	Using gcc compiler to write c programs
5	Configuring mail server
6	Configuring FTP server
7	Connecting to internet
8	Implementing different commands to manage file system
9	Implementation of virtualization
10	Becoming super user and implementing configuration commands
11	Implementing commands to manage users

- Instructor can select the commands, utilities and services to be managed on their own.

Reference Books:

1. Linux: The complete reference by Richard Petersen, Published by Tata McGraw- Hill Publication.
2. Linux in a Nutshell: A Desktop Quick Reference, 6th Edition by Stephen Figgins, Arnold Robbins, Ellen Siever & Robert Love Published by O'Reilly Media.
3. Unix Shell Programming by Yashavant P. Kanetkar, Published by BPB Publishers.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Artificial Intelligence Laboratory

Course Code: UGCA1951

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5th	Contact hours: 4 hours per week
Internal max. marks: 30	Theory/Practical: Practical
External max. marks: 20	Duration of end semester examinations (ESE): 3hrs
Total marks: 50	Elective status: Core

Prerequisite: Working Knowledge of Python Programming Language

Co requisite: Installing Python, Installing packages, Loading data

Additional material required in ESE: -NA-

Course Outcomes: Students will able to Learn

CO1	Developing simple applications using AI tools.
CO2	Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.
CO3	Formulate and solve problems with uncertain information using Bayesian approaches.
CO4	Apply concept Natural Language processing to problems leading to understanding of cognitive computing.

Instructions:

1.	Learn the building blocks of Logic Programming in Python.
2.	Python script for comparing mathematical expressions and finding out unknown values.
3.	Use logic programming in Python to check for prime numbers.
4.	Use logic programming in Python parse a family tree and infer the relationships between the family members.
5.	Python script for building a puzzle solver.
6.	Implementation of Naïve Bayes classifier, computing its accuracy and visualizing its performance.
7.	Creation of a fuzzy control system which models how you might choose to tip at a restaurant.
8.	Implementation of uninformed search techniques in Python.
9.	Implementation of heuristic search techniques in Python.
10.	Python script for tokenizing text data.
11.	Extracting the frequency of terms using a Bag of Words model.
12.	Predict the category to which a given piece of text belongs.
13.	Python code for visualizing audio speech signal
14.	Python code for Generating audio signals
15.	Python code for Synthesizing tones to generate music

I. K.Gujral Punjab Technical University
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Reference Books:

1. Artificial Intelligence with Python, Prateek Joshi, Packt Publishing.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Motion Graphics & Compositing
Course Code: UGWD1917

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 6 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge 2D & 3D animation tools.
Co requisite: **NA.**

Additional material required in ESE:

Course Outcomes: Students will be able to

CO1	Learn the practical knowledge about broadcasting methods used in industry.
CO2	Learn the fundamentals of motion graphics and television related animations.
CO3	Animate the videos with effects.
CO4	Learn about the Motion Graphics in detail.

Detailed contents	Contact hours
UNIT-I Introduction to Motion Graphics: Briefing about compositing and its basic fundamentals. A round-up of broadcast design concepts, looking at specific examples of teasers, promos, typography, openers and pack shots. Introduction to Motion graphics and Principles of Motion Graphics. Workflow for creating motion graphics. Introduction to Adobe After Effects: Basics of GUI and related terminologies, Managing and setting up workspace. Different file formats. Using project panel, Footage, Composition, Timeline, Effects and Presets. Importing and Organizing footages and files, Using Ram preview for playback.	9 hours

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UNIT-II Compositions and Layers: Creating, saving and back up of projects. Broadcasting fundamentals, Pixel aspect ratios, frame rates and various terminologies behind broadcasting. Trimming, Splitting and concept of in and Out points. layer stacks, modes and switches. Shape layers and solid layers. Mask and transparent layers. Pre-composing, nesting, and Pre-rendering. Layer effects: Using color depth and HDR colors. Color correction and color adjustment. Color Management, color profiles and Broadcast safe colors. Using layer markers, composition markers and XMP metadata. Using 3D layers and co-ordinate system in Adobe After Effects. Light Layer, Null Layer and Adjustment Layer.	8 hours
UNIT –III Animation and Dynamics: Animation basics in after effects. Introduction to graph editor. Applying, selecting, editing, moving, copying and deleting key frames. Animating objects with Motion paths, motion blur and smoothing animation. Adding randomness to key values. Learning Interpolation types like Linear, Bezier and Auto Bezier, Continuous Bezier Interpolation and Hold Interpolation. Controlling speed of the animation. Using time remapping and frame blending. Animating footage using Expressions.	8 hours
UNIT-IV Audio and Transitions: Fundamentals of Audio. Technical terminologies related to Audio and Sound. Using Audio files, Synchronizing and editing audio, Controlling Pitch and Temp, Adding effects like Echo, Reverb etc. Separating Bass and Treble and Audio equalizing. Rendering: Fundamentals of rendering and exporting, Using Render Queue. Using proxies. Exporting still images and sequences. Learning output formats, codec, compression ratios and other terminologies related to rendering. Converting footages from NTSC to Pal. Using Pull down.	8 hours

Text Book:

Broadcast Graphics On the Spot, Richard Harrington, Routledge, 1 Edition, 2017.

Reference Book:

1. Adobe After Effects CC Classroom in a Book, Lisa Fridsma, Pearson Education, 1st edition, 2018.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Digital Marketing

Course Code: UGCA1947

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 6 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge of Photoshop and illustrator.

Co requisite: **NA.**

Additional material required in ESE:

Course Outcomes: Students will be able to

CO1	Learn how to use new media such as mobile, search and social networking.
CO2	Understand how and why to use digital marketing for multiple goals within a larger marketing and/or media strategy.
CO3	Understand the major digital marketing channels - online advertising: Digital display, video, mobile, search engine, and social media.
CO4	Learn to develop, evaluate, and execute a comprehensive digital marketing strategy and plan

Detailed contents	Contact hours
UNIT-I Introduction to Digital Marketing Difference between Traditional Marketing and Digital Marketing, Benefits of using Digital Media, Inbound and Outbound Marketing, Online marketing POEM: (Paid, Owned, and Earned Media), Components of Online Marketing (Email, Forum, Social network, Banner, Blog), Impact of Online Marketing, Basics of Affiliate Marketing, Viral Marketing, Influencer Marketing, Referral Marketing. Email Marketing: Email newsletters, Digests, Dedicated Emails, Lead Nurturing, Sponsorship Emails and Transactional Emails, Drawbacks of Email Marketing Social Media Marketing (SMM): Different types of Social Media Marketing like Facebook, LinkedIn, Twitter, Video, Instagram etc.	9 hours

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<p>Unit –II</p> <p>Search Engine Optimisation (SEO) About SEO, Need of an SEO friendly website, Importance of Internet and Search Engines; Role of Keywords in SEO.</p> <p>On-Page Optimization (Onsite): Basics of Website Designing / Development;HTML Basics for SEO; Onsite Optimization Basics; Website Structure and Navigation Menu Optimization; SEO Content Writing. Keywords Research and Analysis (eg. SWOT analysis of website, finding appropriate keywords).</p> <p>Off Page Optimization: Introduction; Local marketing of websites depending on locations; Promoting Subsequent pages of the website. Introduction to organic SEO vs non-organic SEO; Social Media Optimization Techniques and Page Rank Technology.</p>	<p>8 hours</p>
<p>Unit-III</p> <p>Website Planning & Creation</p> <p>Content Marketing Strategy: Goals and concepts, Strategic building blocks, Content creation & channel distribution, Tools of the trade, Advantages and challenges.</p> <p>Keywords Research and Analysis: Introduction to Keyword Research; Business Analysis; Types of Keywords; Keywords Analysis Tools.</p> <p>Web Presence: How to increase online presence and drive more traffic for a website, Search result visibility in search engines for chosen keyword and phrases, Using e-mail marketing to drive traffic for a website, Posting social media content for lead generation, Tools to create and manage content, Use of Blogging as content strategy.</p> <p>Creating content: Writing and posting content on the web and in social networks, blog and video; Create, manage and implement a content marketing strategy; Monitoring and recording results to improve content marketing campaigns; Successful content marketing strategies and case studies.</p>	<p>8 hours</p>

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Unit-IV Online Advertising, Mobile Marketing and Web analytics Introduction to Online Advertising and its advantages, Paid versus Organic, Pay Per Click (PPC) Model. Basic concepts Cost per Click (CPC), CPM, CTR, CR etc. About Mobile Marketing, Objectives of Mobile Advertising, Creating a Mobile Marketing Strategy, Introduction to SMS Marketing. About Web Analytics, Types of Web Analytics (On-site, Off-site), Importance of Web Analytics	8 hours
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Text Books:

1. Puneet Singh Bhatia, Fundamentals of Digital Marketing First Edition, Publication Pearson.
2. Vandana Ahuja, Digital Marketing 1st Edition, Publication Oxford
3. Shivani Karwal, “Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing”, CreateSpace Independent Publishing Platform, 1st edition.

Reference Books:

1. Ian Dodson, The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted and Measurable Online Campaigns, Publication Wiley India Pvt Ltd.
2. Philip Kotler, Hermawan Kartajaya, Iwan Setiawan, Marketing 4.0: Moving from Traditional to Digital, Publication Wiley India Pvt Ltd.
3. Venakataramana Rolla, “Digital Marketing Practice guide for SMB: SEO, SEM and SMM”, CreateSpace Independent Publishing Platform, First edition.
4. Enge, E., Spencer, S., Stricchiola, J., & Fishkin, R. (2012). The art of SEO. " O'Reilly Media, Inc."

E Books/ Online learning material:

1. www.sakshat.ac.in
 2. <https://swayam.gov.in>
 3. <https://www.edx.org/course/online-marketing-strategies-curtinx-mkt5x>
<https://www.emarketinginstitute.org/free-courses/> eMarketing Institute
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Introduction to Gaming

Course Code: UGWD1918

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 6 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester examinations (ESE): 3hrs
Total marks: 100	Elective status: Skill Enhancement Course

Prerequisite: Students must have basic knowledge of 2D & 3D.

Co requisite: NA

Additional material required in ESE:

Course outcomes: Students will be able to

CO1	Know the entire development process from a concept to a final playable game, in an easier and simulated environment.
CO2	Know about to video games, their various forms and the career options available within.
CO3	Know practically dabble in making small video games and get real-time experience of game development and create small playable segments of a game.

Detailed contents	Contact hours
UNIT-I Introduction to Gaming: Introduction to gaming. The definitions of “Game”. History, currentaffairs, popular titles of today, etc. Different Genres of gaming. Different platforms where games existand how they differ.	9 hours
UNIT-II Gaming Roles: Different roles that exist in Game Development. Some on Programming for games. A general overview of what fieldsexits inside programming for games and how, they differ.	8 hours
Unit –III Different theories of Game Designing: An introduction to different theories of fun and flow (Extremely basic to let them know there is a LOT to study about). Level Design: Various approaches: A description of different ways studios makes levels and real life examples of level design from Theme parks: a roller-coaster ride and a Disneyland “Haunted Mansion” to illustrate a level.	8 hours
UNIT-IV Game Level designing in build Box: A case study of a popular game by the faculty to practically showcase all the concepts of game design and Elements that constitutes a game.	8 hours

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Text Book:

1. Level Up! The Guide to Great Video Game Design, Scott Rogers John Wiley & Sons;2nd edition, 2014.

Reference Book:

1. The Art of Game Design: A Book of Lenses, Jesse Schell, A K Peters/CRC Press, 2edition, 2014.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Motion Graphics & Compositing Laboratory
Course Code: UGWD1920

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge 2D & 3D animation tools.

Co requisite:-- **NA.**

Additional material required in ESE:- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO1	Learn about the color keying, tracking and the Effects panel in After effects.
CO2	Edit or create animation, dynamics and composition for visual effects.
CO3	Know about audio and rendering after implementation of visual effects on footage.

Instructions:

1	Assignment on A round-up of broadcast design concepts.
2	Assignment on designing teasers, promos, typography, openers and pack shots with motion effects.
3	Assignment on short logo motion video using project panel.
4	Assignment on motion video of poster using Footage, Composition, Timeline, Effects and Presets.
5	Assignment on workflow for creating motion graphics.
6	Assignment on editing video with managing and setting up workspace.
7	Assignment on combining different motion effects together (text effect & background).
8	Assignment on one point and two point perspective.
9	Assignment on project panel, Footage, Composition, Timeline, Effects and Presets.
10	Assignment on editing short text motion video with layer effect (by using color depth and HDR colors).
11	Assignment on developing on motion video with graph editor. Applying, selecting, editing, moving, copying and deleting key frames.
12	Assignment on animating objects with Motion paths, motion blur and smoothing animation. Adding randomness to key values.
13	Assignment on animating footage using Expressions.
14	Assignment on rendering and exporting the full motion video.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Text Book:

Creative Motion Graphic Titling for Film, Video, and the Web: Dynamic Motion GraphicTitle Design, Yael Braha, Routledge, 1 edition, 2018.

Reference Book:

1. Motion Graphics with Adobe Creative Suite 5 Studio Techniques, Richard Harrington,Adobe Press; 1 edition, 2010.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Digital Marketing Laboratory

Course Code: UGCA1953

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge 2D & 3D animation tools.

Co requisite:-- NA.

Additional material required in ESE:- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO1	Familiarizing with the key elements of a digital marketing strategy.
CO2	The students will be able to perform practical skills in common digital marketing tools such as SEO, Social media and Blogs.
CO3	Learn to manage the major digital marketing channels - online advertising: Digital display, video, mobile, search engine, and social media
CO4	Learn to develop, evaluate, and execute a comprehensive digital marketing strategy and plan.

Instructions:

1.	Explore Facebook, LinkedIn, Twitter, Video, Instagram, blog etc
2.	Explore Online Display Advertising, Ecommerce Marketing, Mobile Web and Content marketing.
3.	Explore Email Marketing; Google AdWords and Google Analytics
The instructor needs to discuss a case study using Search Engine Optimisation (SEO). Case Study – I : Student will plan and create a webpage will display Web presence	
4.	How to increase online presence and drive more traffic for a website.
5.	Search result visibility in Google for chosen keyword and phrases.
6.	Using e-mail marketing to drive traffic for a website.
7.	Posting social media content for lead generation.
8.	Tools to create and manage content.
9.	Use of Blogging as content strategy
Case Study – II : Student will plan and create a commercial website	
10.	Show results for Search Engine Algorithms & Page Rank Technology
11.	How to promote home page, SWOT Analysis of Website & finding right appropriate keywords.

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12.	Monitoring and recording results to improve content marketing campaigns
13.	Writing and posting content on the web and in social networks.
Case Study – III : Student will identify an activity for Email/ Mobile/ Social Media Marketing	
14.	Create a Video/ YouTuber
15.	Manage a Video/ YouTuber platform and enhance viewership.

Text Books:

1. Puneet Singh Bhatia, Fundamentals of Digital Marketing First Edition, Publication Pearson.
2. Vandana Ahuja, Digital Marketing 1st Edition, Publication Oxford
3. Shivani Karwal, “Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing”, CreateSpace Independent Publishing Platform, 1st edition.

Reference Books:

1. Ian Dodson, The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted and Measurable Online Campaigns, Publication Wiley India Pvt Ltd.
 2. Philip Kotler, Hermawan Kartajaya, Iwan Setiawan, Marketing 4.0: Moving from Traditional to Digital, Publication Wiley India Pvt Ltd.
 3. Venakataramana Rolla, “Digital Marketing Practice guide for SMB: SEO, SEM and SMM”, CreateSpace Independent Publishing Platform, First edition.
 4. Enge, E., Spencer, S., Stricchiola, J., & Fishkin, R. (2012). The art of SEO. " O'Reilly Media, Inc."
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Introduction to Gaming Laboratory
Course Code: UGWD1921

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 2 hours per week
Internal max. marks: 30	Theory/Practical: Practical
External max. marks: 20	Duration of end semester examinations (ESE):
Total marks: 50	Elective status: Skill Enhancement Course

Prerequisite: Students must have basic knowledge of 2D & 3D tools.

Co requisite:-- NA

Additional material required in ESE: Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course outcomes: Students will be able to

CO#	Course outcomes
CO1	Learn the elements of game mechanics.
CO2	Know about game testing.
CO3	Know about the entire game designing process from the concept to final playable game.

Instructions:

1.	Assignment on creating Gaming background by adding background.
2.	Assignment on theme based character visualization design.
3.	Assignment on designing realistic, Semi Realistic cartoons.
4.	Assignment on designing the gaming props, weapons and accessories according to the theme.
5.	Assignment on game theme and creating game map according to scene.
6.	Assignment based on layout designing, Creating illustrations for levels.
7.	Assignment based on Audio Formats- Digital and Analogue practical assignments and practice.
8.	Assignment on Game Environment design.
9.	Assignment based on Creating architecture stuff based on the theme of the game.
10.	Assignment based on Compiling the scene of the game.

Text Book:

1. Unity Game Development Cookbook, Paris Buttfield, O'Reilly, 2019

Reference Book:

1. Creating 3D Game Art for the iPhone with Unity: Featuring modo and Blender pipelines, Wes McDermott, Routledge, 1 edition, 2010

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Elective - II

Course Name: Programming in Java
Course Code: UGCA1932

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 6 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge of programming languages.

Co requisite:-- **NA.**

Additional material required in ESE:-

Course Outcomes: Students will be able to

CO1	Familiarize with the concept of Object Oriented concepts by implementing Java Programming.
CO2	Learn the concepts of classes & objects with the features of reusability and implementation of the same with various control structures to solve real world problems.
CO3	Understand and design built-in and user defined functions/methods, interfaces and packages etc.
CO4	Handle various types of data using arrays & strings and handling of exceptions occurred in programs.

Detailed contents	Contact hours
Unit-I Java Programming Fundamentals: Introduction to Java, Stage for Java, Origin, Challenges of Java, Java Features, Java Program Development, ObjectOriented Programming. Java Essentials: Elements of Java Program, Java API, Variables and Literals, Primitive Data Types, The String class, Variables, Constants, Operators, Scope of Variables & Blocks, Types of Comment in Java.	8

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Unit-II Control Statements: Decision making statements (if, if-else, nested if,else if ladder, switch, conditional operator), Looping statements (while, do-while, for,nested loops), Jumping statements (Break and Continue).	8
Unit-III Arrays and Strings: Introduction to array, Processing Array Contents, Passingarray as argument, Returning array from methods, Array of objects,2D arrays, Array with three or more dimensions. String class, string concatenation, Comparing strings, Substring, Difference between String and String Buffer class, String Tokenizer class. Interface and Packages: Basics of interface, Multiple Interfaces, Multiple Inheritance Using Interface, Multilevel Interface, Packages, Create and AccessPackages, Static Import and Package Class, Access Specifiers. Exception Handling: Introduction, Try and Catch Blocks, Multiple Catch,Nested Try, Finally, Throw Statement, Built-In Exceptions.	8
Unit-IV Multithreading: Introduction, Threads in Java, Thread Creation, Lifecycleof Thread, Joining a Thread, Thread Scheduler, Thread Priority, Thread Synchronization. Applets: Introduction, Applet Class, Applet Life Cycle, Graphics in Applet, Event-Handling. File and I/O Streams: File Class, Streams, Byte Streams, Filtered Byte Streams, Random Access File Class, Character Streams.	9

Text Books:

Programming with Java A Primer, 5th Edition, E. Balagurusamy, TMH.

Java Programming for Core and Advanced Learners, Sagayaraja, Denis,Karthik,Gajalakshmi, Universities Press.

Java Fundamentals, A Comprehensive Introduction, H. Schildt, D. Skrien, TMH.

Reference Books:

Java, The complete Reference, H. Schildt, 7th Edition, TMH.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Machine Learning

Course Code: UGCA1950

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have basic knowledge of Coding Languages.

Co requisite: NA

Additional material required in ESE:

Course outcomes: Students will be able to

CO1	Know about the Learning methodologies of Artificial Neural Networks.
CO2	Learn the concept of clustering
CO3	Differentiate supervised and unsupervised learning
CO4	Understand the concept of Reinforcement learning

Detailed Contents	Contact hours
Unit-I Introduction What is Machine Learning, Unsupervised Learning, Reinforcement Learning Machine Learning Use-Cases, Machine Learning Process Flow, Machine Learning Categories, Linear regression and Gradient descent.	8
Unit-II Supervised Learning Classification and its use cases, Decision Tree, Algorithm for Decision Tree Induction Creating a Perfect Decision Tree, Confusion Matrix, Random Forest. What is Naïve Bayes, How Naïve Bayes works, Implementing Naïve Bayes Classifier, Support Vector Machine, Illustration how Support Vector Machine works, Hyper parameter Optimization, Grid Search Vs Random Search, Implementation of Support Vector Machine for Classification.	8
Unit-III Clustering What is Clustering & its Use Cases, K-means Clustering, How does K-means algorithm work, C-means Clustering, Hierarchical Clustering, How Hierarchical Clustering works.	8

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Unit-IV Why Reinforcement Learning, Elements of Reinforcement Learning, Exploration vs Exploitation dilemma, Epsilon Greedy Algorithm, Markov Decision Process (MDP) Q values and V values, Q – Learning, α values.	9
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B.Sc. (Graphics and Web Designing)

Text Books:

1. Pattern Reorganization and Machine learning by Christopher M. Bishop.
 2. The elements of Statistical learning by Jeromeh. Friedman, Robert Tivshirani and Trevorhaspie.
 3. Introduction to Machine Learning by Ethem Alpaydin. PHI Publisher.
 4. Machine Learning, A practical approach on the statistical learinging theory by Rodrigo fernandes de Mello and Moacir Antonelli Ponti.
 5. Machine Learning A probabilistic prospective by Kevin P. Murphy
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Information Security

Course Code: UGCA1948

Program: B.Sc. (Graphics and Web Designing)	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 6 th	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have basic knowledge of Coding Languages.

Co requisite: NA

Additional material required in ESE:

Course outcomes: Students will be able to

CO1	Acquire a practical overview of the issues involved in the field of information security.
CO2	Demonstrate a basic understanding of the practice of information security.
CO3	To understand the information security risks across diverse settings including the Internet and WWW based commerce systems.
CO4	Explore the idea that in Information Security answers are not always known, and proposed solutions could give rise to new, equally complex problems.
CO5	Student will be able to develop the understating about information security

Detailed Contents	Contact hours
Unit –I The Security Problem in Computing: The meaning of computer Security, Computer Criminals, Methods of Defense, Elementary Cryptography: Substitution Ciphers, Transpositions, Making “Good” Encryption algorithms, Secure Architecture of an open System. DES and RSA Algorithm, Asymmetric and symmetric Key Cryptography, Role based Security, Digital Signatures, The Data Encryption Standard, The AES Encryption Algorithms, Public Key Encryptions, Uses of Encryption.	8

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<p>Unit-II</p> <p>Security in Program and Operating System: Secure Programs, Non malicious Program Errors, viruses and other malicious code, Targeted Malicious code, controls Against Program Threats, Protection in General- Purpose operating system protected objects and methods of protection memory and addmens protection, File protection Mechanisms, UserAuthentication Designing Trusted.</p> <p>Operating System: Security polices, models of security, trusted Operating System design, Assurance in trusted Operating System Implementation examples.</p>	8
<p>Unit-III</p> <p>Database and Network Security: Database Integration and Secrecy, Inferential Control, Sensitive data, Inference, multilevel database, proposals for multilevel security. Security in Network: Threats in Network, Network Security Controls, Firewalls, Intrusion Detection Systems,Secure E-Mail</p>	8
<p>Unit-IV</p> <p>Administering Security: Security Planning, Risk Analysis, Organizational Security policies, Physical Security. Legal Privacy and Ethical Issues in Computer Security: ProtectingPrograms and data, Information and the law, Rights of Employees and Employers, Software failures, Computer Crime, Praia, Ethical issues in Computer Security, Case Studies of Corporate Security.</p>	9

Text Books

1. Charles P.Pfleeger, Shari Lawrence. Security in Computing, Pfleeger. PHI.
2. Jason Andress. The Basics of Information Security, Syngress
3. Mark Stamp. Information Security: Principles and Practice, Wiley.
4. A. Kahate, Cryptography and Network Security, TMH.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)
Elective – II Laboratory

Course Name: Programming in Java Laboratory
Course Code: UGCA1938

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge Basic knowledge of Programming language like Programming in C.

Co requisite:-- NA.

Additional material required in ESE:- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO1	Implement Core Java concepts.
CO2	Solve computational problems using various operators of Java.
CO3	Design solutions to complex by handling exceptions that may occur in the programs.

Instructions:

1	Write a program to perform following operations on two numbers input by the user: 1) Addition 2) subtraction 3) multiplication 4) division
2	Write a Java program to print result of the following operations. 1. -15 + 58 * 45 2. (35+8) % 6 3. 24 + -5*3 / 7 4. 15 + 18 / 3 * 2 - 9 % 3
3	Write a Java program to compute area of: 1) Circle 2) rectangle 3) triangle 4) square
4	Write a program to convert temperature from Fahrenheit to Celsius degree using Java.
5	Write a program through Java that reads a number in inches, converts it to meters.
6	Write a program to convert minutes into a number of years and days.
7	Write a Java program that prints current time in GMT.
8	Design a program in Java to solve quadratic equations using if, if else
9	Write a Java program to determine greatest number of three numbers.
10	Write program that gets a number from the user and generates an integer between 1 and 7 subsequently should display the name of the weekday as per that number.
11	Construct a Java program to find the number of days in a month.
12	Write a program to sum values of an Single Dimensional array.
13	Design & execute a program in Java to sort a numeric array and a string array.
14	Calculate the average value of array elements through Java Program.
16	Find the index of an array element by writing a program in Java.
17	Write a Java program to remove a specific element from an array.

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18.	Design a program to copy an array by iterating the array.
19.	Write a Java program to insert an element (on a specific position) into Multidimensional array.
20.	Write a program to perform following operations on strings: Compare two strings. Count string length. Convert upper case to lower case & vice versa. Concatenate two strings. Print a substring.
21.	Developed Program & design a method to find the smallest number among three numbers.

Test Book:

1. Programming with Java A Primer, 5th Edition, E. Balagurusamy, TMH.
2. Java Programming for Core and Advanced Learners, Sagayaraja, Denis, Karthik, Gajalakshmi, Universities Press.
3. Java Fundamentals, A Comprehensive Introduction, H. Schildt, D. Skrien, TMH.

Reference Book:

1. Java, The complete Reference, H. Schildt, 7th Edition, TMH.
2. Data Analytics using R, Seema Acharya, TMH.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Machine Learning Laboratory

Course Code: UGCA1956

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):
Total marks: 100	Elective status: Core

Prerequisite: Students must have the knowledge of editors like Notepad etc. and basic understanding of Scripting Language/s.

Co requisite: Knowledge of Networking, Internet, Client Server concepts, Static & Dynamic environment of the websites etc.

Additional material required in ESE:

Course Outcomes: After studying this course, students will be able to:

CO1	Understand the concepts of Machine Learning.
CO2	Design Python/Java programs for various Learning algorithms.
CO3	To implement basic algorithms in clustering & classification applied to text & numeric data
CO4	Identify and apply Machine Learning algorithms to solve real world problems.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

1.	Read the numeric data from .CSV file and use some basic operation on it.
2.	Write a program to demonstrate the working of the decision tree algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
3.	Write a program to demonstrate the working of the Random Forest algorithm.
4.	Write a program to implement the naïve Bayesian classifier for a sample training dataset stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
5.	Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
6.	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
7.	Write a program to implement k-Nearest Neighbour algorithm to classify the iris dataset. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.

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8.	Write a program to demonstrate the working of the K-means clustering algorithm.
9.	Write a program to demonstrate the working of the Support Vector Machine for Classification Algorithm.
10.	Write a program to demonstrate the working of the Hierarchical Clustering

Reference Books:

1. Rodrigo fernandes de Mello and Moacir Antonelli Ponti., Machine Learning, A practical approach on the statistical learning
 2. Christopher Bishop, “Pattern Recognition and Machine Learning” Springer, 2007.
 3. Stephen Marsland, “Machine Learning – An Algorithmic Perspective”, Chapman and Hall, CRC Press, Second Edition, 2014.
 4. Kevin P. Murphy, “Machine Learning: A Probabilistic Perspective”, MIT Press, 2012.
 5. Ethem Alpaydin, “Introduction to Machine Learning”, MIT Press, Third Edition, 2014
 6. Tom Mitchell, “Machine Learning”, McGraw-Hill, 1997.
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I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)

Course Name: Information Security Laboratory

Course Code: UGCA1954

Program: B.Sc. (Graphics and Web Designing)	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE):
Total marks: 100	Elective status: Core

Prerequisite:-- Student must have the basic knowledge Basic knowledge of Programming language like Programming in C.

Co requisite:-- NA.

Additional material required in ESE:- Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: Students will be able to

CO1	Acquire a practical overview of the issues involved in the field of information security.
CO2	Demonstrate a basic understanding of the practice of information security.
CO3	Explore the idea that in Information Security answers are not always known, and proposed solutions could give rise to new, equally complex problems.
CO4	Student will be able to develop the understanding about information security

Assignments:

1	Study of System threat attacks - Denial of Services.
2	Study of Sniffing and Spoofing attacks.
3	Study of Techniques uses for Web Based Password Capturing.
4	Study of Different attacks causes by Virus and Trojans.
5	Study of Anti-Intrusion Technique – Honey pot.
6	Study of Symmetric Encryption Scheme – RC4.
7	Implementation of S-DES algorithm for data encryption
8	Implementation of Asymmetric Encryption Scheme – RSA.
9	Study of IP based Authentication.
10	Study of Cryptography Techniques
11	Study of Encryption algorithms
12	Study of Security policies
13	Study of Network Security Fundamentals, Ethical Hacking and Social Engineering

Reference Books:

1. Charles P. Pfleeger, Shari Lawrence. Security in Computing, Pfleeger. PHI.
2. Jason Andress. The Basics of Information Security, Syngress
3. Mark Stamp. Information Security: Principles and Practice, Wiley.
4. A. Kahate, Cryptography and Network Security, TMH.

I. K.Gujral Punjab Technical University
B.Sc. (Graphics and Web Designing)
Guidelines regarding Mentoring and
Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.
3. Evaluation shall be based on rubrics for Part – A & B
4. Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.