CURRICULUM

For

2-Year DIPLOMA IN
INFORMATION TECHNOLOGY

DEVELOPED BY, KHYBER PAKHTUNKHAWA BOARD

ADOPTED BY, SBTE KARACHI

KHYBER PAKHTUNKHWA
BOARD OF TECHNICAL & COMMERCE EDUCATION



COURSE CONTENTS

FOR

POST MATRIC
DIPLOMA IN INFORMATION TECHNOLOGY
(2-YEAR)

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SCHEME OF STUDIES & EVALUATION PLAN FOR POST MATRIC DIPLOMA IN INFORMATION TECHNOLOGY (2-Year)

Part-I (First Year)

		Classes per Week		Marks		
S.N	**SUBJECT**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**
1	ICT	3	3	75	25	100
2	Introduction to MS-Office	3	3	75	25	100
3	Computer Networks	3	3	75	25	100
4	Operating System	3	3	75	25	100
5	Introduction to Programming	3	3	75	25	100
6	Library Activities	-	2	-	-	-
Total		15	17	375	125	500

Part-II (First Year)

		Classes per Week		Marks		
S.N	**SUBJECT**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**
1	Data Base System	3	3	75	25	100
2	Video Editing	3	3	75	25	100
3	Web Development Essential	3	3	75	25	100
4	Graphics Design	3	3	75	25	100
5	Project	0	6	0	100	100
6	Library Activities	-	2	-	-	-
Total		12	20	375	125	500

Part-III (Second Year)

S.No	SUBJECT	Classes per Week		Marks		
		Theory	Practical	Theory	Practical	Total
1	English-I	6	0	100	0	100
2	Urdu-I	6	0	100	0	100
3*	Islamiat / Religious Education	3	0	50	0	50
4**	Mutalae Quran-e-Hakeem	3	0	50	0	50
5	Elective Subjects (Any one combination of 03 Subjects from the give list.)	6+6	0	100+100	0	200
6	Library Activities	-	2	-	-	-
Total		30	2	500		500

Subject combinations for Computer Science Group

1	2	3
i. Mathematics-I ii. Economics-I iii. Computer Science ***	i. Mathematics-I ii. Statistics-I iii. Computer Science ***	i. Mathematics-I ii. Physics-I iii. Computer Science ***

* Islamyat / Islamic Education / Religious Education / Ethics (for Non-Muslims)

** Mutalae Quran-e-Hakeem / Translation of the Holy Quran / Ethics or Civics (For Non-Muslims)

*** The subjects of Computer Science will be studied in First year (Part-I & Part-II)

Part-IV (Second Year)

S.No	SUBJECT	Classes per Week		Marks		
		Theory	Practical	Theory	Practical	Total
1	English-II	6	0	100	0	100
2	Urdu-II	6	0	100	0	100
3	Pak-Study	3	0	50	0	50
4*	Mutalae Quran-e-Hakeem	3	0	50	0	50
5	Elective Subjects (Any one combination of 03 Subjects from the give list.)	6+6	0	100+100	0	200
6	Library Activities	-	2	-	-	-
Total		30	2	500	0	500

Subject combinations for Computer Science Group

1	2	4
i. Mathematics-II ii. Economics-II iii. Computer Science **	i. Mathematics-II ii. Statistics-II iii. Computer Science**	i. Mathematics-II ii. Physics-II iii. Computer Science**

* Mutalae Quran-e-Hakeem / Translation of the Holy Quran / Ethics or Civics (For Non-Muslims)

** The subjects of Computer Science will be studied in First year (Part-I & Part-II)

Note:

Regional Language (100 Marks) will be introduced as a compulsory subject as per implementation plan.

Introduction to Information & Communication Technologies (ICT)

(DIT Part – I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

Course Description:

This course is designed for students with little or no computer experience. This course introduces computer concepts, hardware components, basic computer operations and use of software applications to solve problems. Students will have complete understanding of the basic concepts and use of personal computers and application software.

Aims and Objectives:

After successful completion of this course, students should be able to:

- Develop a vocabulary of key terms related to computers and software programs
- Identify the components of a personal computer system
- Demonstrate mouse and keyboard functions
- Demonstrate window and menu commands and how they are used
- Demonstrate how to organize files and documents on a USB/hard drive
- Demonstrate basic maintenance of a computer
- end email messages and navigate and search through the internet.

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION TO COMPUTERS** 1.1 History and Evolution of Computers 1.2 Hardware Components: Input Devices, Output Devices, System Unit, Storage Devices, Communication Devices 1.3 Computer Software: System Software, Application Software, Installing and Running 1.4 Programs, Software Development 1.5 Computer Types: Personal Computers, Desktop Computers, Mobile Computing Devices, Embedded Computers, Game Consoles, Servers, Thin Clients, Mainframes, Supercomputers 1.6 Computer Applications: Education, Finance, Government, Health Care, Science, Publishing, Travel, Manufacturing	03 Weeks	18
02	**SYSTEM UNIT COMPONENTS** 2.1 The Motherboard 2.2 Processor The Control Unit, The Arithmetic Logic Unit, Machine Cycle, The System Clock, Comparison of PC Processors 2.3 Memory Bits, Bytes, Addressing, Types (RAM, ROM, Cache, Flash, CMOS) 2.4 Expansion Slots, Adapter Cards and Drive Bays 2.5 Ports and Connectors USB, VGA, HDMI, Audio, Network, FireWire 2.6 Power Supply	03 Weeks	18
03	**INPUT & OUTPUT DEVICES** 3.1 What is input? 3.2 Keyboard and Pointing devices Mouse, Joystick, Trackball, Touchpad 3.3 Touch Screen, Pen and Stylus 3.4 Other types of input Game Controllers, Digital Cameras, Voice Input, Scanners, Biometric, Terminals 3.5 What is output? 3.6 Display Devices: CRT Monitors, LCD/LED Monitors 3.7 Printers: Non-Impact/Impact, Inkjet, Laser, Multifunction, Thermal, Plotters & Large format printers 3.8 Other Output Devices: Speakers, Headphones, Multimedia Projectors, Interactive Whiteboards	02 Weeks	12

04	**DIGITAL STORAGE** 4.1. Hard Disks Characteristics of a Hard Disk, Internal/External, RAID, NAS 4.2. Flash Storage Solid State Drives, Memory Cards, USB Flash Drives, Express Card Modules 4.3. Optical Storage CDs, DVDs, Blue-ray Disks 4.4. Magnetic Tape Storage 4.5. Cloud Storage	02 Weeks	12
05	**SYSTEM SOFTWARE** 5.1. Operating Systems 5.2. OS Functions Starting and Shutting Down a Computer, Providing a User Interface, Managing Programs, Managing Memory, Coordinating Tasks, Configuring Devices, Establishing an Internet Connection, Monitoring Performance, Providing File Management and Other Utilities, Updating Software Automatically, Controlling a Network, Administering Security 5.3. OS Types: Stand-Alone OS, Server OS, Embedded OS; Windows, Linux 5.4. OS Utility Programs: File Manager, Search Utility, Uninstaller, Image Viewer, Disk Cleanup, Disk Defragmenter, Backup and Restore Utilities, Screen Saver, Firewall, Antivirus Programs, Spyware and Adware Removers, File Compression, Media Player, Disc Burning 5.5. Personal Computer Maintenance	03 Weeks	18
06	**APPLICATION SOFTWARE** 6.1. The need and role of Application Software 6.2. Working with Application Software 6.3. Business Software Word Processing, Spreadsheets, Databases, Presentations, Project Management, Personal Information Manager Software, Business Software for Smartphones, Accounting Software Graphics & Multimedia Software: Computer-Aided Design, Desktop Publishing, Paint/Image Editing Software, Video and Audio Editing Software, Multimedia Authoring, Web Page Authoring Software 6.4. Web Applications 6.5. Typing Assistance Software (Typing Tutor/Master etc)	03 Weeks	18

07	**THE INTERNET AND THE WORLD WIDE WEB** 7.1. Network and the Internet Connecting to the Internet Access Providers How Data Travel on the Internet Internet Addresses 7.2. The World Wide Web Browsing the Web Web Addresses Navigating Web Pages Searching on the Web Types of Web Sites Web Publishing 7.3. E-Commerce 7.4. Other Services on the Internet: E-Mail, Instant Messaging, VoIP, FTP, Video Conferencing, Social Media 7.5. Computer Security Computer Malware and Attacks Safeguards against Viruses, Worms, Trojan Horses, Malware 7.6. Information Privacy 7.7. Computer Ethics 7.8. Cybercrimes 7.9. Health Concerns of Computer Use	04 Weeks	24
	Total	**20**	**120**

Lab Requirements **(Hardware / Software)**	• A modest PC, preferably with Core i3 generation 3rd or above processor, with at least 4GB RAM and 200GB hard disk, LCD, Printer and preferably a scanner • DSL internet connection with Access Point/Modem/Switch and related cables and connectors • MS Windows 10 or above • Typing Tutor/Master or any other available typing software • Other Application Software, may be downloaded from the web
List of Practical	• Opening system box and identifying hardware components (processor, RAM, HDD, slots, ports etc) • Installing/uninstalling hardware components • Identifying, connecting, disconnecting cables and external devices like printers, monitors etc • Troubleshooting hardware issues • Windows installation and configuration • Typing Tutor/Master installation • Other Application Software installation • Familiarization with Windows icons • Windows Command Prompt and familiarization with basic DOS commands • Creating icons and shortcuts • Playing with Control Panel • Finding specifications of a computer • Formatting hard drives • Creating, copying, moving, deleting files and directories • Disk defragmentation

	• Disk backup and restore • User Management on Windows • Updating software manually and automatically • Troubleshooting software issues • Printer installation and troubleshooting • Toner replacement, Paper jam resolution • Connecting and using scanners • Playing with Windows Task Manager • Identifying file types and associating default programs for opening • Zipping and unzipping files • Disk burning • Installation of free Antivirus software and scanning files for malware • Connecting to the internet • Identifying Access Points, Modems, Switches and cables • Creating email addresses and sending/receiving emails • Connecting with and browsing LAN • Installing and using different web browsers • Browsing and searching the Web • Using Google Advanced Search • Using Video Conferencing software
Reference Material	• Shelly, G. B., & Vermaat, M. E. (2012). *Discovering computers fundamentals: your interactive guide to the digital world (Latest ed.)*. Cengage Learning

Introduction to MS Office

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After the completion of this course, students are expected to be able:

- To design documents for personal and business use by using Microsoft Office 2016.
- To prepare documents in English/Urdu language by using MS Word.
- To design spreadsheets by using Microsoft Excel 2016.
- To enhance productivity by automating several computational tasks using Excel Macros.
- To present complex data or ideas in an easy to understand form by using Microsoft PowerPoint 2016.
- To develop small scale databases using Microsoft Access 2016.

Module	Course contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION TO OFFICE AUTOMATION SOFTWARE** 1.1 Introduction 1.1.1 Open Source Software 1.1.2 Proprietary Software 1.2 Introduction to Microsoft Office Suite 2016 1.3 MS Office Applications' Primary User Interface 1.3.1 Title bar 1.3.2 Quick Access Toolbar 1.3.3 Quick Access Toolbar 1.3.4 Ribbon 1.3.5 Ribbon Commands/Tabs 1.3.6 Document Page 1.3.7 Status bar	01 Week	06
02	**MICROSOFT WORD** 2.1 General Features of Word processors Editing, Formatting, Page Layout & Printing, Spelling & Grammar, Header & Footer, Picture / Table Insertion & Formatting, Screen Layouts. 2.2 BASIC EDITING Creating a New Document, Saving a Document for the First Time, Saving Document in Different File Formats, Creating a Document Using a Template, Using Print Preview, Printing a Document, Opening an Existing Document, Using Zoom, Finding and Replacing Text, Using AutoCorrect, Cutting Copying and Pasting Text. 2.3 TEXT FORMATTING Using the Font Group, Changing Fonts and Font Sizes, Applying Character Attributes, Setting Character Spacing, Using Format Painter, Applying Styles, Creating and Modifying WordArt, Using the Clear Formatting Button. 2.4 PARAGRAPH FORMATTING Formatting Paragraph, Setting Indents (First Line, Hanging, Left, Right), Setting Line Spacing, Setting Paragraph Spacing, Creating a Bulleted List, Creating a Numbered List. 2.5 PAGE FORMATTING & PRINTING The Layout Tab, Setting Margins, Selecting Page Orientation, Choosing Paper Size, Number of Columns setting, Page & Section Breaks. Selection of Printer, Print Settings. 2.6 CREATING TABLES Using the Insert Table Dialog Box, Layout Tab on the Table Tools Ribbon (Using AutoFit, Resizing a Row or Column, Merging and Splitting Table Cells). 2.7 URDU LANGUAGE SETTING AND TYPING 2.7.1 Built-in settings in Windows-10 OS 2.7.2 Using Pak-Urdu Installer in Older Windows OS	04 Weeks	24

03	**MICROSOFT EXCEL** 3.1 General Features of Spreadsheets Rows, Columns, Worksheets, Workbooks, Functions and Formulas, Editing, Formatting, Screen Layouts. 3.2 WORKING WITH EXCEL Creating a New Workbook, Opening an Existing Workbook, Entering and Editing Data in Worksheet (Entering Basic Data, Deleting and Clearing Cell Contents, Entering Dates, Cutting, Copying and Pasting Data). 3.3 FORMATTING CELLS AND WORKSHEETS Inserting and deleting cells, Merge cells, Format Cells by using Format Painter, Insert and delete columns or rows, Insert headers and footers, Rename a worksheet, Add a worksheet to an existing workbook, Change magnification by using zoom tools. 3.4 USING FORMULAS AND FUNCTIONS Understanding Formulas, Using Absolute and Mixed Cell References in Formulas, Using Cell Ranges in Formulas, Summarizing Data Using Functions (SUM, COUNT, COUNTA, COUNTBLANK, AVERAGE, MIN, MAX), Using Conditional Logic Functions (IF, AND, OR), Using Formulas to Conditionally Summarize Data (SUMIF, COUNTIF), Using Formulas to Modify Text (LEFT, RIGHT, MID, TRIM, UPPER, LOWER, CONCATENATE). 3.5 CREATING CHARTS Creating a new Chart, formatting a Chart with a Quick Style, formatting a Data Series, modifying a Chart's Legend, choosing a different chart type, Switching Between Rows and Columns in Source Data. 3.6 EXCEL MACROS 3.6.1 Definition of Macro 3.6.2 Adding the "Developer" Tab on Ribbon 3.6.3 Steps involved in Recording a simple Macro 3.6.4 Recording a Macro using Absolute References 3.6.5 Recording a Macro using Relative References. 3.6.6 Running a Macro 3.6.7 Creating a Macro for adding a list of items (such as cities, countries, fruits etc) 3.6.8 Creating a Macro for changing the Font and Font size of the whole worksheet 3.6.9 Creating a Macro for changing Date format 3.6.10 Assigning a macro to a Control Button	09 Weeks	54
04	**MICROSOFT POWERPOINT** 4.1 INTRODUCTION PowerPoint Startup Screen, User Interface Components (Title Bar, Quick Access Toolbar, Ribbon, Dialog Box Launcher, Slides Pane, Main Work Area, Status Bar), Ribbon Tabs. 4.2 PRESENTATION BASICS Creating a Presentation, Saving a Presentation, Closing a Presentation, Adding New Slides to a Presentation, Selection of Layout, Duplicating Selected Slides, Rearranging Slides in a Presentation, Deleting Slides	03 Weeks	18

	from a Presentation, Using the Print Preview for Printing Slides, Changing Print Layout. 4.3 WORKING WITH TEXT Using Text Box to Slides, Changing Font Size & Color, Using Format Painter, Creating Numbered Lists, Creating Bulleted Lists, Formatting the Text Box (Using Quick Style, Applying Fill & Border, Applying Texture & Pattern Fill), Checking Spelling. 4.4 ADDING TABLES AND CHARTS IN A PRESENTATION Inserting a Table, Inserting Excel Worksheet, Applying Table Styles, Inserting Chart, Resizing & Moving a Chart. 4.5 USING ANIMATION Applying Transition Effects, Applying Animations, Using Motion Path Animation, Modifying an Animation's Start Options and Timing, Setting Up a Slide Show, Using Presenter View, Creating interactive presentation using Zoom tool.		
05	**MICROSOFT ACCESS** 5.1 Introduction to Microsoft Access 2016 Creating a Database, Saving a Database, Opening an Existing Database. 5.2 Creating Tables Creating a Table in Datasheet view, Saving a Table, Creating a custom Table in Design View, Adding fields in a table, Data types in Access, Setting Primary Key field, Creating relationship between two tables. 5.3 Creating Forms Creating a simple Form, Creating a Form using Form Wizard, Creating a Form using Design View, Sorting data within a Form, Filtering data within a Form. 5.4 Creating Reports Creating a simple report, Creating report using Report Wizard, Creating Reports using Design View. 5.5 Creating Queries Creating a query from a table, Adding table to a query, Creating query from multiple tables, Adding criteria to a query.	03 Weeks	18
	Total	**20**	**120**

Lab Requirements (Hardware / Software)	a. Operating System: Minimum Windows 7 or 10 (32 or 64 bit) b. MS OFFICE 2016.
List of Practical	

Practical Number	Description
	MICROSOFT WORD 2016
1	Running a Microsoft Application such as Word or Excel or PowerPoint or Access identifying the main user interface components such as Title bar, Quick ac toolbar, Ribbon, Tabs, Document Page, Status bar etc.

	2	Identifying different groups available in different Tabs in MS Word 2016.
	3	Create a new document in MS Word 2016 using the File Tab and using the Quick Access Toolbar.
	4	Saving a newly created document in a new folder with a unique file name in default format.
	5	Opening an existing document, adding some contents in it and saving it in PDF format by using Save As command.
	6	Create new documents by using different Sample Templates.
	7	Open an existing multi-page document and explore the print command available in Backstage view for setting various options of Print, Printer and Settings.
	8	Open an existing document and use the Font group of Home Tab for various font settings such as changing font name, font size, superscript, subscript, font color etc.
	9	Open an existing document and use the Advanced tab of Font dialog box for changing the Character Spacing of the current document.
	10	Open an existing document and use the Format Painter button for applying font attributes of a specific text to other text. And use the clear formatting button.
	11	Create a new document, add multiple paragraphs of text and then use the Paragraph group of Home Tab for setting Left, Right, First Line and Hanging Indents.
	12	Open an existing document and then use the Paragraph group of Home Tab for setting Line Spacing and Before/After Paragraph Spacing.
	13	Create a new document, add data items on each line and then convert these data items into bulleted lists and numbered lists. Also create sub lists.
	14	Open an existing multi-page document and use the Page Setup group of Page Layout Tab for setting the page Orientation to Portrait / Landscape, and setting various page Sizes of the current document.
	15	Open an existing multi-page document and use the Page Setup group of Page Layout Tab for setting the Top, Right, Left and Bottom margins of the document.
	16	Open an existing multi-page document and add Page breaks and Section breaks in it.
	17	Open an existing document and use the Print command of the Backstage view for selecting a specific printer, specific page and number of print copies. Finally get a print.
	18	Create a new document and use the Insert Table command of the Tables group in Insert Tab for creating a 3 X 5 table. Add Column headings and Row headings, add data in cells. Resize the Rows height and Columns width.
	19	Open an existing document containing a table, and use the Merge Cells command and Split Cells command of the Merge group of Layout Tab of the Table Tools, for merging more than one cells and splitting a cell respectively.
	20	Install Urdu Language pack in windows 10 to enable Urdu typing. Install Phonetic keyboard for Urdu typing. Then create a new document and add text in Urdu language. Apply Arabic Typesetting and/or Urdu Typesetting fonts on the text.
	MICROSOFT EXCEL 2016	
	21	Starting the MS Excel 2016 for the first time and understanding various options available in the opening screen such as Blank Workbook, Searching for Online Templates, Suggested Searches, Taking a Tour, Recent, Opening other Workbooks etc.
	22	Starting the MS Excel 2016 and identifying or recognizing different user interface components of the application, such as Title bar, Command Tabs, Quick Access Toolbar, File Tab, Ribbon, Name Box, Formula bar, Worksheet Tab, Different groups on different Command Tabs, Row headings, Column headings, Active Cell.
	23	Create a new Blank Workbook. Add contents in all the three worksheets available by default. Save it in default format. Open it again and Save it in PDF format also.
	24	Open an existing Workbook. Add more data in it. Clear some cells' contents. Delete some cells. Cut/Copy some cells and Paste at another worksheet.
	25	Create a new Blank Workbook and add contents in a worksheet. Insert a new cell within the data cells. Insert new column between available columns. Insert new row

		between available rows. Delete a specific cell. Delete a column/row containing data. Use Format Painter.
	26	Open an existing Workbook. Rename its worksheets. Add two new worksheets. Merge some of the adjacent cells. Add Header and Footer in a worksheet. Fill data in adjacent cells in a worksheet by using the Fill Handle.
	27	Open an existing workbook having two or more worksheets containing data. Select data in a worksheet and print the selected data by choosing "Print Selection" in the print settings. Then print the Active worksheet. Then print the whole workbook.
	28	Create a new Workbook. Add some numeric data in a column. Using the formula bar, write a simple arithmetic equation after assignment operator and observe the result. Use the "Show Formula" button in Formula Auditing group of Formulas Tab to see the formula in the cell. Use this formula to understand the order of operators in excel.
	29	Create a new workbook and add numeric contents in a worksheet. Use a Relative reference to write a formula and then copy this formula into other cells to show that the reference is adjusted automatically. Then use an absolute reference. Then use a mixed reference to understand the difference.
	30	Open an existing workbook containing numeric data. Use an absolute reference to write a formula and then copy it to other cells to check that the reference is not changed. Then use a mixed reference to understand the difference.
	31	Open an existing workbook containing numeric and alphanumeric data. Use SUM(), COUNT(), COUNTA() and COUNTBLANK() functions for summarizing data.
	32	Open an existing workbook containing numeric data. Use AVERAGE(), MIN(), MAX() functions for summarizing data.
	33	Create a new workbook. Enter Name, Age in years, City Name and Cell Number of 10 students in a worksheet. Now use the AND function to choose only those students who belong to a specific city and having a specific age in years.
	34	Create a new workbook. Enter 10 students obtained marks in their 5 different subjects. Calculate the Total Obtained Marks column using the SUM function. By using a specific value for Total Marks, find the percentages of each student. Now use the IF function to assign grades to each student.
	35	Create a new workbook. Enter 10 records such that first column contains the names of Items purchased (e.g. Book, Apple, Sugar etc.), second column contains the Category of each item (e.g. Stationery, Fruit, Grocery etc.), third column contains the Price of each item. Now use the SUMIF function to calculate the total price of stationery items purchased.
	36	Open the same workbook used in practical No-35 above and add some more records in it. Then use the COUNTIF function to calculate the total number of grocery items purchased.
	37	Create a new workbook. Add 10 random string(text) values in column A. Then use the LEFT, RIGHT, MID, TRIM, UPPER, LOWER, CONCATENATE functions to modify the text values.
	38	Create a new workbook. Add data such that first column contains the students' class numbers and second column contains their test marks. Then Create a simple Line chart for this data set. Add proper titles for both axes. Modify Chart Title. Edit data series. Add/Remove chart Legend.
	39	Open the same workbook used in practical No-38 above and add third column for Test2 marks. Then create a simple line chart for comparing the marks of two tests. Then change the chart style.
	40	Open an existing workbook. Developer Tab is hidden by default. First show the Developer Tab to be able to use Macros and VBA tools. Go to File Tab, Click on "OPTIONS", Select "Customize Ribbon", then under the Main Tabs select the "Developer" check box and click ok.
	41	Steps involved in recording a macro: 1. Click on "Developer" Tab. 2. Decide whether to record the macro with Absolute References or Relative References (Absolute References is selected by default. If you want to use Relative References then click the button "Use Relative References" just

		below the Record Macro button). 3. Click the "Record Macro" button. 4. A dialog box appears; Write a meaningful name for this macro. 5. Select a key for short cut, shift+ key can also be selected. 6. Decide where the macro should be stored and add optional description of this macro. 7. Click "OK". 8. The "Stop Recording" button appears. 9. Perform all the steps that you want to be recorded. 10. Click "Stop Recording" button.
	42	Running a Macro: A recorded macro can be executed in two ways. 1. Click on "Developer" Tab, Click on "Macros" Button, A dialog box appears showing a list of all macros, Select your desired macro, Click "Run" button. 2. Use the short cut key that was selected before recording the macro.
	43	Macro for adding a list of items: 1. Click on "Developer" Tab and then click on "Use Relative References". 2. Start recording a macro. 3. Write 'macList' in the macro name box. 4. Press "SHIFT+L" in the short cut key for this macro. 5. Click "Ok". 6. Now type some names of cities or fruits etc. in each cell. 7. Click "Stop Recording" Button. 8. Open a new worksheet and click on "Macros" button in the "Developer" Tab, select the "macList" macro from the list of macros and click "Run" button. The list of cities or fruits will be printed here automatically. 9. Now open a new worksheet and press the short cut key "CTRL+SHIFT+L". The list is printed again.
	44	Macro for designing a blank Detailed Marks Certificate: 1. Open a new workbook, click on "Developer" Tab, click on "Use Relative References" button, click on "Record Macro" button. 2. Write 'macDMC' in name box and write "D" in the short cut key for this macro, click "Ok" button. 3. Now click in cell A1. Select range A1:D1, click "Merge and Center" button on Home Tab. 4. Write "Detail Marks Certificate", choose a specific Font color, Font size and Font name. 5. Write down student details such as Name, Roll No, Subjects, Subjects' marks etc. in different cells. 6. Write SUM function in a cell for calculating total marks. 7. Write a formula in a cell for calculating the percentage. 8. Format the contents' area by applying borders, colors, fonts, text alignments, column widths and row heights, fill color etc. 9. Click on "Stop Recording" button. 10. Now open a new worksheet and use the short cut key "CTRL+D" to print the whole designed format automatically. 11. It is a blank DMC. As you type data in its cells, it will automatically show the total marks and percentage in the appropriate cells.
	45	Assigning a macro to a control: 1.Open the same workbook created in practical No-44 above. 2. Open a new worksheet. 3. Click the "Insert" Tab, then click "Illustrations", then click "Shapes", then select "Round Corner" rectangle. 4. Draw a button in the blank worksheet. 5. Right Click on this button and select "Assign Macro" command from the menu. 6. Select the "macDMC" macro from the list of macros and click "Ok". 7. Now click this button to add the DMC. Note that the "macDMC" macro can also be added in the Quick Access Toolbar.
		MICROSOFT POWERPOINT 2016
	46	Create a new presentation in MS PowerPoint 2016 using the File Tab and using the Quick Access Toolbar. Add new slides in it. Add contents in the text boxes. And finally save the presentation in default format. Close the presentation file.
	47	Create a new presentation, select "Title Slide" layout for title slide and "Content and Title" layout for other slides. Add contents in slides. Insert new slides in between slides. Duplicate a slide. Rearrange some slides. Delete some slides.
	48	Open an existing presentation file containing multiple slides. Use print command of Backstage view for selecting different Print Layouts. Then select "2 slides" Handout and Print the slides.
	49	Create a new presentation by selecting the "Training" sample template. Add contents in slides. Format some text boxes using Quick Style, some using Applying Fill and Border, some applying Texture and Pattern Fill. Insert a table in a new slide and apply

		Table Style on it. Insert a chart based on this table.
	50	Open an existing presentation file. Apply different Transition effects on different slide such as Fade, Wipe, Split etc. Then apply different animations on text boxes in a slide such as Zoom, Swivel, Fly In etc. Setup Slide Show for this presentation.
	MICROSOFT ACCESS 2016	
	51	Start MS Access 2016. Create a new Database by selecting "Students" from Sample Templates using the Backstage view (File Tab). Explore different Objects, such as Tables Forms Reports Queries, of the database using Object Navigation Pane. Then Save and Close the database.
	52	Create a new Blank Database. Add Data items in the Table opened by default. Add 10 rows or records. Change Table View to Design View. Change the field names from Field1, Field2 etc. to Meaningful attributes. Change the data types of each field to appropriate data types. Change data type of ID field from AutoNumber to Number. Save the table.
	53	Open an existing Database and add more tables in it. Create primary keys in all tables. Add foreign key attributes in related tables. Then create relationships among related tables. Apply referential integrity rules on related tables. Save the database.
	54	Open an existing database. Create a simple form for an existing table. Create another form for another table by using Form Wizard. Sort data within forms. Filter data within forms.
	55	Open an existing database. Create a new form by using the "Form Design" button in the Forms group of the Create Tab. Add Existing Fields from Tools group in the Design Tab of Form Design Tools. Adjust the Heights and Widths of the Labels and text fields in the form design grid. Change the text format of Labels and Text fields. Change the view to Form View and navigate the form data. Save the database.
	56	Open an existing database. Create a new Simple Query by using the Query Wizard button on the Queries group of Create Tab. Add more data in the source table and then run the query again.
	57	Open an existing database. Run an existing Query. Change query view to Design View. Add Criteria for extracting specific records from the source table. Apply "AND" and/or "OR" criteria. Save the query and database.
	58	Open an existing database. Create a query based on multiple related tables.
	59	Open an existing database. Create a Simple Report through "Report" Button on the Reports group of Create Tab. Change the report view to "Print Preview". Make changes to report layout in Layout View.
	60	Open an existing database. Create a new report in Design View.

Reference Material	1. Book: Excel Macros for Dummies By "Michael Alexander" 2. YouTube Channel " LearnIt Training" for MS OFFICE Applications. 3. Microsoft Official Academic Course (MOAC) which covers the following Microsoft Office Specialist (MOS) Exams: 3.2.MOS Exam 77- 725: WORD 2016 3.3.MOS Exam 77- 727: EXCEL 2016 3.4.MOS Exam 77- 729: POWERPOINT 2016 3.5.MOS Exam 77- 730: ACCESS 2016

Computer Networks

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours Per Week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

General OBJECTIVES:

After completing this course, students will be able to:

- Understanding the basic concept of computer networks.
- Understanding the different types of Cables used for Computer Networks.
- Configuring different network devices.
- Creating different network scenarios in a network simulator (packet tracer)

Module	Course Contents	Allotted Weeks	Contact Hours
01	**BASIC TERMINOLOGIES** 1.1. Components of a Communication Model 1.1.1. Definition 1.1.2. Host / Sender 1.1.3. Media 1.1.4. Message 1.1.5. Protocol 1.1.6. Destination / Receiver 1.2. Computer Networks 1.2.1. Basic Definition & Types 1.2.2. Geographical Area Wise (Physical) (LAN, MAN, WAN, Internet) 1.3. Virtual (Logical) 1.3.1. VLANS 1.3.2. VPNS 1.4. Function / Working	02 Weeks	12
02	**TOPOLOGY** 2.1. Definition 2.2. Types of Topologies 2.2.1. Wired (BUS, Star, Ring, Hybrid, Mesh) 2.2.2. Wireless (Wi-Fi, Satellite, Radio Wave)	02 Weeks	12
03	**NETWORKING DAVIES** 3.1. Node 3.2. NIC 3.3. Modem 3.4. Hub 3.5. Switch 3.6. Wireless Devices 3.6.1. Access Point 3.6.2. Wireless Modem 3.6.3. Wireless USB Antenna 3.7. WAN / Internet 3.7.1. Router 3.7.2. Switch	02 Weeks	12
04	**TRANSMISSION MEDIA** 4.1. Wired media (Guided Media) 4.1.1. Coaxial cable (10 Base2 10 Base 5 10Base T, 100Base X) 4.1.2. BNC Connector 4.1.3. Twisted pair cable 4.1.4. Unshielded twisted- pair i. Cat 2, Cat 3 (Voice Communication) ii. Cat 4, Cat 5, Cat 6 (Data Transmission) iii. RJ-45 Connector 4.1.5. Shielded twisted- pair 4.1.6. Fiber optic cable i. Single Mode ii. Multi-Mode	03 Weeks	18

	4.2. Wireless media 4.2.1. Why we use Wireless Media 4.2.2. Technologies i. Satellite ii. Wi-Fi iii. Bluetooth iv. Microwave v. Radio Wave 4.3. Wireless communication with LANs 4.3.1. Introduction 4.3.2. Wireless Switches / Hub 4.3.3. Wireless NIC		
05	**HOW NETWORK TRANSFER DATA (NETWORK MODELS)?** 5.1. OSI Model 5.1.1. Application Layer 5.1.2. Presentation Layer 5.1.3. Session Layer 5.1.4. Transport Layer 5.1.5. Network Layer 5.1.6. Data Link Layer 5.1.7. Physical Layer 5.2. TCP/IP Model 5.2.1. Application Layer 5.2.2. Transport Layer 5.2.3. Network Layer 5.2.4. Physical or Link-Layer	03 Weeks	18
06	**IP ADDRESSES** 6.1. What is IP address? 6.1.1. Why we use IP Address 6.2. IPV4 6.2.1. Class A, Class B, Class C, Class D, and Class E, IP addresses 6.3. Introduction to IPv6 6.3.1. Why IP V6 introduced? 6.3.2. IP V6 address length (i.e. 128 bits)	02 Weeks	12
07	**PROTOCOLS** 7.1. Definition 7.2. Types 7.3. Routed protocols 7.3.1. Definition 7.4. Routing Protocols 7.4.1. Definition 7.5. Common Protocols 7.5.1. TCP / IIP 7.5.2. UDP 7.5.3. FTP 7.5.4. HTTPs	02 Weeks	12
08	**PRACTICAL PORTION**	04	24

	8.1. Installing and Configuring Modem 8.2. DSL Configuration 8.3. Creating Straight Through cable 8.3.1. Practically demonstrate the connection of computer and hub / switch 8.4. Creating Cross Over Cable 8.4.1. Practically demonstrate the connection of two computers without hub / switch 8.5. Basic Commands for Troubleshooting 8.5.1. Ping, ipconfig / all, ipconfig / renew, ipconfig / release, trace route, 8.6. Packet Tracer (Simulation) 8.6.1. Installing network simulator 8.6.2. Practically Demonstrate 02-Computers Network 8.6.3. Configuring PC's with IP addresses subnet mask and gateway 8.6.4. Create two different topologies of 10-10 computers using Hub 8.6.5. Place Switch between hubs to connect both technologies 8.6.6. Configuring switches by giving name to switches and management IP addresses 8.6.7. Connection PCs to switch and then ping each other` that they are working properly.	Weeks	
	Total	**20**	**120**

Lab Requirements **(Hardware / Software)**	**Recommended:** • Minimum 10 number of Core i3 Computers with 4GB RAM & 250 GB HD or Higher • Wire or Wireless HUB • Minimum 05 number of Crimping Tools • 01 RJ-45 Connector / Per Student • UTP Cable Cat-05 or Higher • Cable Tester • Windows 07 minimum • Cisco Packet Tracer **Additional Resources** • Windows 10 • Switch • Router • DSL Modem • 04 RJ-45 Connectors / Per Student
List of Practical	1. Identify hardware for networking i.e. • NIC • RJ-45 & RJ-11 Connectors • UTP Cable Cat-5 or higher • Crimping Tool • Cable Tester 2. Making Straight Cable 3. Connect the computers in LAN using hub 4. Making Cross-Over Cable 5. Connecting two computers using cross-over cable 6. Connecting two hubs or switches using cross-over cable 7. Use different network commands

	• Ping • Ipconfig • ipconfig / all • Arp –a • Hostname • Tracert 8. Installation of Packet Tracer 9. Creating LAN of two computers, gradually increase the number of computers 10. Creating Wireless LAN (WLAN) 11. Demonstrate the Ping Command 12. Installation, configuration of switch 13. Creating LAN using switch 14. Demonstrate the Router by connecting two different types of networks using Packet Tracer
Reference Material	• Networking Essential by Andrew Tanenbaum • Packet Tracer by Cisco (https://www.packettracernetwork.com/tutorials/)

Operating Systems

(DIT Part-I)

Total Marks:	100	Theory Marks: 75	Practical Marks: 25
Total Weeks:	20		
Contact Hours Per Week:	06		
Total Contact Hours:	120		
Theory Hours:	40		
Practical Hours:	80		

General Objectives:

After completion of this course, a student should be able to:

- Understand the basic concept of an operating system
- Understand different types of operating systems
- Install & configure windows 10
- Install & configure different peripheral devices

Module	Course Contents	Allotted Weeks	Contact Hours
	Theory Portion (Part-A)		
01	**OVERVIEW OF AN OPERATING SYSTEM** 1.1. What is Operating System? 1.2. Types of OS 1.2.1. Desktop OS i. Batch OS (Batch Processing) ii. Multiprogramming Operating System iii. Multiprocessing Operating System iv. Multitasking Operating System v. Network Operating System vi. Real Time Operating System vii. Time Sharing Operating System viii. Distributed Operating System 1.2.2. Mobile / Tablet OS i. Android a. What is android system b. Version & Upgrades ii. IOS	02 Weeks	12
02	**FUNCTIONS OF AN OPERATING SYSTEM** 2.1. Operating System Structures 2.1.1. User Interface 2.2. Functions 2.2.1. Memory Management 2.2.2. Process Management 2.2.3. Resources Management 2.2.4. File Management 2.2.5. Security 2.2.6. Deadlock Prevention 2.2.7. Coordination Between users and software's	02 Weeks	12
03	**PROCESSES** 3.1. Definition 3.2. Process States (05 States) 3.3. Process structure 3.3.1. PCB and components 3.4. Operations on Processes 3.5. Threads	02 Weeks	12
	Practical portion (Part-B)		
04	**INTRODUCTION TO WINDOWS 10** 4.1. Installation Requirements 4.2. How to create Bootable USB / DVD / CD 4.2.1. Rufus Software 4.3. Step-By Step Installation Process 4.4. Hard Disk Partition 4.5. GUI Basics / Desktop Basic 4.6. Start Menu	07 Weeks	42

	4.7. Task Bar 4.8. Settings 4.9. Driver / Hardware Installation 4.9.1. VGA / SVGA / AGP / Gaming Card 4.9.2. Sound Card 4.9.3. Network Interface Card i. Wired ii. Wireless 4.10. Software Installation 4.11. User Creation 4.11.1. Setting Properties 4.11.2. Assigning Role & Permissions 4.12. Tablet Mode 4.13. Dual Desktop 4.14. Network Settings 4.14.1. Join Workgroup 4.14.2. Connecting with DSL MODEM 4.14.3. Connecting with Hotspot 4.15. Updates & Security 4.16. Mouse & Keyboard Settings 4.17. Adding Urdu Keyboards 4.18. Installing & Configuring Printers & Scanner		
05	**NETWORK CONNECTIVITY (NETWORKING)** 5.1. Creating Workgroup 5.2. Assigning IP Address to NIC / HOST / Computer 5.3. File Sharing 5.4. Printer Sharing 5.5. Assigning Permissions to users 5.6. Practically demonstrate the data sharing between computers	03 Weeks	18
06	**WINDOWS SERVER 2019 / 2016** 6.1. Definition 6.2. Difference between client and Server 6.3. Role & Services 6.3.1. Print & Document Services 6.3.2. Active Directory 6.3.3. DHCP 6.3.4. DNS 6.3.5. WINS	04 Weeks	24
	Total	20	120

Lab Requirements **(Hardware / Software)**	Windows 10 Device Drivers Core i3 4GB RAM 250 GB HD or Higher Printer Scanner DSL Modem Additional: Webcam Joystick Barcode Reader HDMI Cable
List of Practical	1. Identify the basic components of computer i.e. CPU-MOUSE-

	KEYBOARD-MONITOR 2. Introduction to BIOS a. Setting System Date & Time b. Setting Boot-Devices Priority i. HD ii. USB Drive / Hard Disk iii. Network 3. Create bootable USB / DVD / CD 4. Windows 10 Installation 5. HD Partition during Installation 6. Setting username & computer name during installation 7. Changing Taskbar & Desktop settings 8. Device Drivers Installation a. Via Settings b. Without settings (Direct installation) 9. Un-installing a software via settings 10. Converting windows from computer to tablet mode 11. Creating & using dual desktops 12. How to join a workgroup? 13. Configure & connect DSL Modem 14. Using Internet via Hotspot 15. How to add Urdu Keyboard & fonts 16. Printer Installation 17. Printer sharing on LAN 18. Scanner Installation 19. Demonstrate the scanning document process 20. Assign IP address to your computer 21. Share your files & folder 22. Assign Permissions 23. Password Recovery 24. Backup & Restore 25. Defender Additional a. Windows Server 2019/2016 Installation b. Install & Configure Active Directory c. Install & Configure DNS d. Install & Configure DHCP
Reference Material	1. Operating Systems by William stalling 2. Windows 10 simplified Book (Paul McFedries) 3. Operating System & Networks by Tariq Mahmood & Imran Saeed (IT Series)

Introduction to Programming

(DIT Part-I)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students will be able to write a python script that uses:

- Variables to store different data type values.
- Arithmetic Operators to perform calculations.
- Conditional Statement (If, else, elif), Execute a block of code based on certain condition. What to run and what to skip.
- Loops (for and While) to execute a block of code again and again based on certain conditions.
- Type Casting to convert the variable as per requirements i.e., from number to string or string to number.
- Strings, to store characters, and work with it by using different built-in functions.
- Lists that organize different data types together as a container.
- Functions
- Turtle library to create basic shapes such as Square, Rectangle, Triangle and Stars.

Module	Course Contents	Allotted Weeks	Contact Hours
	Python Programming Language		
01	**Introduction to Programming** 1.1. What is a program? 1.2. Languages of Programming a computer 1.2.1. Machine Language 1.2.2. Assembly Language 1.2.3. High Level Language 1.3. Algorithm 1.4. Compiler vs Interpreter 1.5. Introduction and Benefits of Python 1.6. History of Python 1.7. Exercise	02 Weeks	12
02	**GETTING STARTED WITH PYTHON** 2.1. Downloading and Installation of Python IDE (PyCharm) 2.2. Anatomy of Python Program 2.3. Write your first Hello World! Script 2.4. Guidelines for creating Script 2.4.1. Importance of comments 2.4.2. Spacing 2.5. Programming Errors: 2.5.1. Syntax Error 2.5.2. Runtime Errors 2.5.3. Logical Errors 2.6. Exercise	02 Weeks	12
03	**VARIABLES & OPERATORS** 3.1. Variables in Python 3.2. Rules and Guidelines for creating a variable 3.3. Assignment Operator 3.4. Multiple Assignments 3.5. Use of Buit-in function (type) 3.6. Arithmetic Operators (+, -, /, *, **) 3.7. Type Conversion Vs Type Casting 3.8. Boolean Operator 3.9. Logical & Comparison Operators 3.10. Exercise	02 Weeks	12
04	**STRINGS** 4.1. Understanding Strings 4.2. Combine vs Repeat Strings 4.3. String's Buit in Methods (capitalize (), len (), lower (), upper (), strip (), replace (), startwith(), endswith()) 4.4. Exercise	02 Weeks	12
05	**LISTS** 5.1. Understanding Lists 5.2. Forward vs Backward Accessing 5.3. Changing, Removing and Adding Element 5.4. Slice a List 5.5. Membership Operator: in vs not in	02 Weeks	12

	5.6. Exercise		
06	**CONDITIONAL STATEMENT:** 6.1. if statement 6.2. else statement 6.3. elif statement 6.4. Exercise	02 Weeks	12
07	**LOOPS:** 7.1. for loop 7.2. while loop 7.3. continue vs break 7.4. Exercise	02 Weeks	12
08	**FUNCTIONS** 8.1. Understanding functions 8.2. print vs return statement 8.3. Variable scope 8.4. Default arguments 8.5. Exercise	02 Weeks	12
09	**WORKING WITH GRAPHICS** 9.1. Introduction to Turtle 9.2. Basic commands (forward(), back(), left(), right()) 9.3. Draw Shapes (Lines, Square, Rectangle, Circle, Star) 9.4. Working with Excel File using Panda 9.4.1. Reading an Excel file using Python 9.4.2. Writing into an excel file using Python 9.5. Other Useful Python Libraries 9.5.1. Numpy 9.5.2. Matplotlib 9.5.3. Tkinter 9.5.4. Django 9.5.5. Kotlin 9.5.6. Micropython 9.5.7. PyGame **Practical (25,26,27,28,29,30,31)**	04 Weeks	24
	Total	20	120

Lab Requirements **(Hardware / Software)**	**1. Hardware Requirements:** • CPU: Intel Core or Xeon 3GHz (or Dual Core 2GHz) or equal AMD CPU • RAM: 4 GB (6 GB recommended) • Display Resolution: 1280×1024 is recommended, 1024×768 is minimum. **2. Software Requirement:** • 64-bit versions of Microsoft Windows 11, 10, 8 • Install PyCharm Community
List of Practical	1. Write a script to display “Hello World!! “On console.

2. The electricity bills for the last three months have been 23000, 32000 and 64000. What is the average monthly electricity bill over the three-month period? Write an expression to calculate the mean, and use print() to view the result.

3. Write a script to calculate the area of circle. (Area of Circle: $A = \pi r^2$).
4. Write a script that Count all letters, digits, and special symbols from a given string. **inputString** = "P@#yn26at^&i5ve"
5. Write a script to find all occurrences of "Baqir" in a given string ignoring the case.

   inputString = "Baqir is student of python programming class. Baqir belongs to district peshawar"
6. Write a script to split a given string on hyphens and display each substring.

   inputString = Bareera-is-a-data-scientist
7. Write a script to check whether a number entered by user is even or odd.
8. Write a script to check whether a number is divisible by 7 or not.
9. Write a script to takes score from a user between (1 and 100) and display its grade according to score. (Score: 1-50 Grade: Average) (Score: 51-70 Grade: Good) (Score: 71-100 Grade: Excellent).
10. Write a script to print First 10 natural numbers using loop (while, for).
11. Write a script to print factorial of the given number (while, for).
12. Write a script to calculate the sum of all numbers from 1 to a given number (while, for).
13. Write a program to print multiplication table of a given number (while, for)
14. Write a script to print the list the reverse order.
15. Write a script that takes five fruits name from the user and store it in a list. Display the list elements using for loop.
16. Write a script to turn every item of a list into its square.

    (numberList= [2,4,6,6,10])
17. Write a script that copy all the elements of the given list and append it to new list name updatedList.

    list = ['Mango', 'Apple','Banana,'Melon','Grapes']
18. You have been given a Python list. Write a script to find value 20 in the list, and if it is present, replace it with 200. **list** = [22,12,25,667,988,387,20,188,77]

	19. Write a script that takes an input string from a user and find that if the string exists or not in the given list. **list** = [‘Pakistan’, ‘Shayan’, ‘Baqir’, ‘GCMS’] 20. Write a script that find all the elements in a list start with letter B. Names = [“Ali”, “Shayan”,”Baqir”,”Bareera”,”Zulfiqar”] 21. Write a Python function that accepts two numbers as arguments and returns the sum. 22. Write a Python function that accepts different values as parameters and returns a list. 23. Write a Python function that returns multiple values. 24. Write a Python function to find the factorial of a number. 25. Write a python script to draw star on screen. 26. Write a python script to display rectangle on screen 27. Write a python script to draw square on screen. 28. Write a python script to draw a circle on screen. 29. Write a python script to draw lines on screen.
Reference Material	• Introduction to Programming using Python by Y. Daniel Liang • Python For Dummies by Stef Maruch & Aahz Maruch • https://docs.python.org/3/tutorial/index.html

DATABASE SYSTEMS

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students are expected to be able:

- To ascertain the importance of databases in knowledge-based societies.
- To understand the basic concepts of Database and Database Management Systems.
- To transform an Entity Relationship Model into a Relational Schema.
- To use an Open Source software.
- To apply SQL commands for data manipulation in a database.
- To use MySQL Community Server 8.0 for Creating and Maintaining a database.
- To Create Front-end in MS ACCESS for MySQL Databases

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION TO DATABASE CONCEPTS** 1.1 Definition of Database 1.2 Importance/Advantages of Databases 1.3 Database Models 1.3.1 Hierarchical 1.3.2 Network 1.3.3 Relational 1.4 Definition of Database Management System (DBMS) 1.4.1 Relational DBMS (SQL Based) (MS Access, MS SQL, MySQL, ORACLE) 1.4.2 Non-Relational DBMS (NoSQL) (MongoDB, HBase, Cassandra) 1.5 Functions of DBMS 1.5.1 Data Dictionary Management 1.5.2 Data Storage Management 1.5.3 Data Integrity Management 1.5.4 Backup & Recovery Management 1.5.5 Security Management 1.5.6 Multi-User Access Control	01 Week	06
02	**RELATIONAL DATABASE CONCEPTS** 2.1 Definition of Relational Database & RDBMS 2.2 Entity, Table, Record, Field 2.3 Primary Key, Composite Key, Foreign Key 2.4 Referential Integrity 2.5 Types of Relationships 2.5.1 One-to-One 2.5.2 One-to-Many 2.5.3 Many-to-Many	01 Week	06
03	**DATA MODELLING** 3.1 Introduction to Data Modelling & its importance 3.2 Definition of Entity Relationship Diagram (ERD) 3.3 Elements of ERD 3.4 Transforming ERD to Relational Schema 3.5 Normalization of Relational Database 3.5.1 First Normal Form (1NF) 3.5.2 Second Normal Form (2NF) 3.5.3 Third Normal Form (3NF)	03 Weeks	18
04	**DATABASE DEVELOPMENT USING MYSQL** 4.1 Introduction to MYSQL 4.1.1 Definition and advantages of MySQL 4.1.2 Installation of MySQL Community Server 8.0 4.1.3 Introduction to MySQL Workbench 8.0 4.1.4 Introduction to MySQL Shell 8.0 4.1.5 Introduction to MySQL 8.0 Command Line Client 4.2 Introduction to Structured Query Language (SQL) 4.2.1 Data Definition Language (DDL) 4.2.2 Data Manipulation Language (DML) 4.2.3 Data Control Language	15 Weeks	90

4.3 MySQL Statements for Database Development

4.3.1 Database Manipulation

i. CREATE DATABASE statement
ii. DROP DATABASE statement
iii. USE Statement

4.3.2 Basic Data Types

i. VARCHAR
ii. TEXT
iii. LONGTEXT
iv. INT
v. BIGINT
vi. FLOAT
vii. DOUBLE
viii. BOOL
ix. DATE
x. TIME
xi. YEAR

4.3.3 Table Manipulation

i. SHOW TABLE Statement
ii. CREATE TABLE statement
iii. DROP TABLE statement
iv. TRUNCATE TABLE statement
v. ALTER TABLE statement
vi. ALTER TABLE – ADD
vii. ALTER TABLE – DROP COLUMN
viii. ALTER TABLE – MODIFY COLUMN
ix. CREATE INDEX statement
x. INSERT INTO statement
xi. UPDATE statement
xii. DELETE statement
xiii. LIMIT clause
xiv. INSERT INTO SELECT statement
xv. DESC and EXPLAIN statements

4.3.4 Data Retrieval

i. SELECT statement
ii. SELECT DISTINCT statement
iii. WHERE clause
iv. Operators used in WHERE clause
v. Wildcards (% , _) used in WHERE clause
vi. AND, OR, NOT Operators
vii. ORDER BY clause
viii. ORDER BY DESC
ix. GROUP BY statement
x. HAVING clause

4.3.5 Constraints

i. NOT NULL
ii. UNIQUE
iii. PRIMARY KEY
iv. FOREIGN KEY
v. DEFAULT
vi. CHECK

4.3.6 Functions

i. AVG()

	ii. COUNT() iii. CONCAT() iv. LOWER() v. LENGTH() vi. LTRIM() vii. MIN() viii. MAX() ix. RTRIM() x. REPLACE() xi. REPEAT() xii. STRCMP() xiii. SUBSTR() xiv. SUM() xv. UPPER() 4.3.7 MySQL Operators i. Arithmetic Operators ii. Comparison Operators iii. Logical Operators 4.3.8 Views i. CREATE VIEW statement ii. DROP VIEW statement 4.3.9 MySQL Joins i. INNER JOIN ii. LEFT JOIN iii. RIGHT JOIN iv. CROSS JOIN 4.3.10 Front-end-Development i. Connection MS Access to MySQL Database. ii. Creating Forms for MySQL Databases iii. Creating Reports for MySQL Databases		
	TOTAL	**20**	**120**

Lab Requirements (Software)	**Software Requirements:** • Minimum Windows 7 (64-bit, Professional level or higher) • Mac OS X 10.6.1+ • Ubuntu 9.10 (64bit) • Ubuntu 8.04 (32bit/64bit)

List of Practical

Practical Number	Description
1	Downloading and Installation of MySQL Server 8.0: 1. Download MySQL Community Server from dev.mysql.com/downloads/mysql/ 2. Install MySQL Server 8.0, MySQL Workbench 8.0 and MySQL Shell 8.0 as follow: (a) Run the downloaded mysql-installer-community-8.0 file. (b) Choose the Custom setup type, click Next. (c) Select 'MySQL Server 8.0' from Servers, 'MySQL Workbench 8.0' and 'MySQL Shell 8.0' from Applications, 'Samples and Examples' from Documentation. Click arrow key to bring these products in the list of "Products to be Installed". Click Next then Click Execute then Next. (d) Leave default settings on

		Type and Networking, click next. Keep "Use strong password….." and click next. Create a MySQL Root Password and click next. Leave default settings on "Windows Service" and click next. Keep default settings and click next. Click Execute. Click Finish. (e) Enter password and click check. Then Next and then Execute. Finally click Finish, Next and Finish. (f) The MySQL Workbench 8.0 and MySQL Shell tool will be started. To verify the successful installation of MySQL Server, run the windows command prompt and execute this command "mysql --version". It will show the version and full name. Don't forget to add the path in environment variable.
	2	Starting MySQL Server and Establishing the Session/Connection: 1. The MySQL Server will automatically start by starting windows because it was selected by default during the installation of MySQL Server. 2. If MySQL Server is not started automatically, then (a) Write 'Services' in the search box on Taskbar and press Enter key. (b) Services dialog box appears. Search for the 'MySQL80' service in the list of services. (c) In the 'MySQL80' properties, while 'General' tab is opened, select the Startup Type as Automatic. (d) If the Service status is Stopped, click on Start. 3. Connect to MySQL Server by following these steps: (a) Start windows command prompt. (b) Write 'mysqlsh' command and press Enter key. MySQL JS prompt will appear. (c) Write '\sql' command and press enter key to change command prompt to SQL mode. (d) Write '\connect root@localhost' command and press enter key. Then enter the password. Choose whether to save password or not. (e) If your MySQL Connection Id is shown, then Server is started and connection is established successfully. (f) Now here all SQL commands can be used to play with MySQL databases.
	3	MySQL Workbench User Interface: 1. Start MySQL Workbench 8.0. Title bar shows the application name "MySQL Workbench". Below the title bar is Tab bar which shows Home Tab. Below the Home Tab is Menu bar. 2. On the main window, Click on "Local instance MySQL80 root localhost:3306". 3. Enter the root Password. A new Tab will open containing "Query1 window", Navigator Pane, Information Pane, Output pane etc. This Tab is named as "Local instance MySQL80". You can click the home Tab icon (on the left) to go to the Home Screen. 4. The toolbar available under the menu bar contains controls for creating a new database (Schema), new table, new view, SQL tab etc. 5. In the Navigator Pane, two Tabs are available; Administration and Schemas. Administration Tab provides features for managing the server, clients etc. Schemas Tab allows to manage Databases. 6. Click on Schemas Tab to show available databases.
	4	Using MySQL Shell tool for exploring available databases: 1. Connect to MySQL Server as explained in step-3 of practical No-2 above. 2. Write command "show databases;" and press enter. Available databases are shown.

		3. Write command "use world;" and press enter. Default database will be set to World. (Note the prompt which contains database name) 4. Write "show tables;" and press enter. All tables of 'world' database will be shown. 5. Write "select * from city" and press enter. All records of 'city' table will be shown. 6. CTRL + L is used to clear screen. CTRL + C is used to interrupt execution.
	5	Creating and Deleting a MySQL Database: 1. Connect to MySQL Server as explained in step-3 of practical No-2 above. 2. Write 'create database college;' command and press enter. 3. Write 'create database shop;' command and press enter. 4. Write 'show databases;' command and press enter. The list contains both DBs. 5. Now write 'drop database shop;' command and press enter to delete SHOP Db.
	6	Creating table in a MySQL database: 1. Connect to MySQL Server as explained in step-3 of practical No-2 above. 2. Write 'use college;' command and press enter to set default schema to College. 3. Execute 'show tables;' command to list all tables in College database. It is currently empty because it was only created in practical No-5 above. 4. Execute 'create table Student (id int, name text(15), age int);' command to create a new table called Student. 5. Insert 5 records in Student table using 'INSERT INTO' statement. 6. Extract all data from Student table using SELECT statement.
	7	Adding more attributes in existing table: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Use the ALTER TABLE - ADD statement to add two more columns (City and Phone No) in Student table. 3. Use UPDATE statement to populate these two new columns with data. 4. Extract all records using SELECT statement.
	8	Deleting a Column of a Table and Changing data type of a Column: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of Student table by using SELECT statement. 3. Use ALTER TABLE- DROP COLUMN statement to delete city column. 4. Use DESC statement to show the structure of Student table. 5. Use ALTER TABLE – MODIFY COLUMN statement to change the data type of phone column from VARCHAR to BIGINT. 6. Again use the DESC statement to show the structure of Student table.
	9	Creating a duplicate table and setting the Primary Key: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of Student table by using SELECT statement. 3. Execute 'CREATE TABLE studentcopy SELECT id, name, age, phone, city FROM student; ' command to create a duplicate table called studentcopy.

		4. Show all records of the new table. 5. Execute 'ALTER TABLE studentcopy ADD Primary Key (id);' command to set the ID field as Primary key of studentcopy table. 6. Execute 'DESC studentcopy' command to check table structure.
	10	Deleting only data from table and then using INSERT INTO SELECT: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of studentcopy table by using SELECT statement. 3. Execute 'TRUNCATE TABLE studentcopy;' command to delete all records in the studentcopy table and then check, it will be empty. 4. Now execute this command to fill the studentcopy table again with the data of student table. ' INSERT INTO studentcopy SELECT * FROM student; ' 5. Check its structure by using the DESC or EXPLAIN statement.
	11	Creating an Index on a table and using the LIMIT clause: 1. Start using the 'College' database (created above) in MySQL Shell. 2. Show all data of studentcopy table by using SELECT statement. 3. Execute ' CREATE INDEX idx_age ON studentcopy (age); ' command to create an index on the age field of studentcopy table. 4. Execute ' SELECT * FROM studentcopy LIMIT 3;' to extract only 3 records.
	12	Applying NOT NULL and Setting Primary Key: 1. Create a new database and name it as 'Pharma'. 2. Set default database to pharma by using USE statement. 3. Create a new Table Customer with fields CID as INT, CNAME as TEXT, CCITY as TEXT, CPHONE as TEXT. 4. Set CID as Primary Key and NOT NULL. 5. Insert at least 20 records in this table.
	13	Creating a database table using MySQL Workbench 8.0: 1. Start MySQL Workbench 8.0 from windows start menu, click on "Local instance MySQL80 root localhost:3306" and enter the root password. 2. In the Navigator pane, click on 'Schemas' tab. All databases are shown. 3. Double click on 'Pharma' database to select it as current database in use. 4. In the Query window, write 'CREATE TABLE supplier (SID INT NOT NULL, SNAME VARCHAR(15), SCITY TEXT(15), SPHONE TEXT(12), Primary Key (SID));' statement for creating a new table Supplier. 5. Press CTRL + ENTER to execute the current statement. The new table is created which can be checked in the left pane by pressing the refresh button. 6. In the next line of Query window write 'SELECT * FROM SUPPLIER;' and press CTRL+ENTER to show all records. The Result Grid below shows empty table.
	14	Creating More Tables 'Pharma' database in MySQL Workbench: 1. Continue using the 'Pharma' database created in practical No-13 above, in MySQL Workbench. 2. Enter at least 20 records in the 'supplier' table by using the result grid user interface. 3. Create following 4 more tables in similar way in the MySQL

		Workbench. a. MedicineType (TID(int), TYPE(text)) b. Medicine (MID(int), MNAME(text), MPRICE(int), MEXPIRY(date), SID(int), TID(int)) c. CustomerOrdersMedicine (ORDID(int), MID(int), Quantity(int)) d. CustomerOrders (ORDID(int), CID(int), ORDDATE(date))
	15	1. Continue using the 'Pharma' database created in practical No-13 & 14 above, in MySQL Workbench. 2. Define Foreign keys in newly created tables. 3. Enter at least 20 records in each table created in practical No-14 above using MySQL Workbench. 4. Then extract specific records from these tables using the WHERE clause, using wildcards, using AND OR NOT operators. 5. Create views for these tables. 6. Combine tables using different MySQL JOIN statements.
	16	Creating an ODBC Connection for MS ACCESS: 1. Open Control Panel and click on "System and Security" option. 2. Click on "Administrative tools". In new window, click on "ODBC Source". 3. ODBC Administrative window opens up. Click "System DSN" Tab. Click "ADD" button. 4. Create new data source window opens up. In the list search for "MySQL ODBC Driver". If the driver is not in the list, then you have to download it as explained in practical No-17 below. 5. Select "MySQL ODBC Driver" and click Finish. A configuration window MySQL Connector/ODBC" appears. 6. Give any name of your choice in "Data Source Name" field. Write "localhost" in TCP/IP Server field. Write "root" in User field and enter root password in password field. Select desired MySQL database in drop down menu and click "Test". "Connection Successful" test result message appears. Click "OK" to complete the process.
	17	Downloading MySQL ODBC Connector: 1. Go to www.mysql.com, click on Downloads. 2. Click on MySQL Community Downloads. Then click on "Connector/ODBC". Download relevant mysql odbc 8.0 (32/64 bit) MSI installer. Install the downloaded file.
	18	Developing Front-end for MySQL database: 1. Open a blank database in MS ACCESS. 2. Click on External Data, New Data Source, From other sources, and click on ODBC Database. 3. In the new dialog box, click on "Link to the data source by creating a linked table" 4. In the "Select Data Source" dialog box, click on "Machine Data Source", then select the name of ODBC connection and click 'OK'. 5. The connection is established and all the Tables of the database appears. 6. Now create a form for any table of your connected MySQL database and enter new records. 7. Open the same MySQL database in MySQL Workbench and check the new record there. 8. Create a report in MS ACCESS for any table of your MySQL

		database. Front-end (through MS ACCESS Forms and Reports) is created
Reference Material	• https://dev.mysql.com/downloads/mysql/ • https://www.w3schools.com/mysql/default.asp • https://www.mysqltutorial.org	

Video Editing

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	80				
Practical Hours:	40				

GENERAL OBJECTIVES:

After completion of this course, students are expected to be able:

- To Understand the Video Editing in different environment.
- To Design, Edit, Crop different Videos and understand Graphics & colors.
- To Work in Fiver etc as a Free Lancer
- To work with organization and industries

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTRODUCTION** 1.1. Background and history of video editing 1.2. Goals of editing 1.3. Basics of video editing 1.4. Stages of editing 1.5. Evolution of software	01 Week	06
02	2.1. Introduction to Adobe Premiere Pro 2.2. Installation and activation of Adobe Premiere Pro 2.3. Footage and Aspect ratio 2.4. Video Formats	02 Weeks	12
03	3.1. Different ways to import footage (video) in Premier Pro 3.2. Organizing Assets in different ways 3.3. Preview and Select Assets 3.4. Sequence (timeline) 3.5. Source window in Premiere Pro 3.6. Tools Panel in Premiere Pro 3.7. Timeline in Premiere Pro 3.8. When to cut and why?	03 Week	18
04	4.1. Effects control window 4.2. Video transitions in Premiere Pro 4.3. Video Effects in Premiere Pro 4.4. Opacity and blending modes 4.5. Stabilizing shaky footage 4.6. Adding mask in Premiere Pro 4.7. Different types of cut in video editing 4.8. Continuity of action 4.9. Pacing and Rhythm 4.10. Speed and time re-mapping	04 Weeks	24
05	5.1. Action Edit 5.2. Copy paste attributes in Premiere Pro 5.3. Creating montage in Premiere pro 5.4. Short cut keys in Premiere Pro 5.5. Audio editing 5.6. Supporting software for sound design 5.7. Multi camera editing 5.8. Editing music videos 5.9. Nesting and blending	04 Weeks	24
06	6.1. Titler 6.2. Captions and sub-titles 6.3. Import & work on image sequence 6.4. Graphic tab 6.5. Markers and labels 6.6. Color grading 6.7. Adjustment layers 6.8. Duplicating a person	04 Week	24
07	7.1. Green screen keying	02	12

	7.2. Export media 7.3. After effects	Week	
	Total	20	120

Lab Requirements **(Hardware / Software)**	Adobe Primer Pro
List of Practical	1) Logo Intro Video Creating 2) Green Screen Background Remove 3) Sound Effects Audio production 4) Video Cutting 5) Social Media Lower Thirds 6) Title Sequences 7) Text Animations 8) Documentaries Video Creating 9) Vlogs Video Production 10) YouTube Videos Editing 11) Promotional Videos Creating 12) Tutorials Editing 13) Corporate and Business Videos 14) Real Estate Videos Creating
Reference Material	• GFX Mentor • https://help.adobe.com/archive/en/premiere-pro/cs6/premiere_pro_reference.pdf

Web Development Essentials

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks:	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After completion of this course, students are expected to be able:

- To Understand the Basic of Web Development
- To Understand the HTML, CSS and JavaScript Basic Code.
- Create HTML5 documents.
- Create CSS stylesheets Layout Design.
- Implement program logic using JavaScript.

Module	Course Contents	Allotted Weeks	Contact Hours
01	**INTERNET AND WORLD WIDE WEB INTERNET** 1.1 Working of internet 1.1.1 Benefits of Internet 1.1.2 Ethics of Internet 1.2 Services of Internet 1.2.1 World Wide Web (www) 1.2.2 Email 1.2.3 Social Networking 1.2.4 Mailing List 1.2.5 News Group 1.3 Web Browser 1.3.1 Functions of Web Browser 1.3.2 Type of Browsers 1.4 Web Server 1.5 Web Directories 1.6 Websites 1.6.1 Static 1.6.2 Dynamic 1.7 Search Engine 1.8 Web Page Program Development 1.8.1 Roles in Web site development team 1.8.2 Web Development Scope 1.9 Scripting languages 1.9.1 JavaScript 1.9.2 PHP 1.10 Web hosting 1.10.1 Web Hosting Services 1.10.2 Types of web Hosting 1.11 Cookie 1.11.1 Types of Cookies 1.11.2 Uses of Cookies 1.11.3 Browser Setting for Cookies 1.11.4 Privacy Concerns about Cookies 1.12 Web 2.0 1.13 Web 3.0	04 Weeks	24
02	**HTML5 INTRODUCTION** 2.1 HTML Editors 2.2 HTML Basic 2.3 HTML Elements 2.4 HTML Attributes 2.5 HTML Headings 2.6 HTML Paragraphs 2.7 HTML Styles 2.8 HTML Formatting 2.9 HTML Quotations 2.10 HTML Comments 2.11 HTML Colors	04 Weeks	24

	2.12 HTML CSS 2.13 HTML Links 2.14 HTML Images 2.15 HTML Favicon 2.16 HTML Tables 2.17 HTML Lists 2.18 HTML Block & Inline 2.19 HTML Classes 2.20 HTML Id 2.21 HTML Iframes 2.22 HTML Head 2.23 HTML Layout 2.24 HTML Forms		
03	**CSS INTRODUCTION** 3.1 CSS Syntax 3.2 CSS Selectors 3.3 CSS How To Use 3.4 CSS Comments 3.5 CSS Colors 3.6 CSS Backgrounds 3.7 CSS Borders 3.8 CSS Margins 3.9 CSS Padding 3.10 CSS Height/Width 3.11 CSS Box Model 3.12 CSS Outline 3.13 CSS Text 3.14 CSS Fonts 3.15 CSS Icons 3.16 CSS Links 3.17 CSS Lists 3.18 CSS Tables 3.19 CSS Display 3.20 CSS Max-width 3.21 CSS Position 3.22 CSS Z-index 3.23 CSS Overflow 3.24 CSS Float 3.25 CSS Inline-block 3.26 CSS Align 3.27 CSS Opacity 3.28 CSS Navigation Bar 3.29 CSS Dropdowns 3.30 CSS Attribute Selectors	06 Weeks	36
04	**JAVASCRIPT** 4.1 JS Introduction 4.2 JS Output 4.3 JS Statements 4.4 JS Structure 4.5 JS Comments	06 Weeks	36

	4.6 JS Variables 4.7 JS Let 4.8 JS Const 4.9 JS Operators 4.10 Functions 4.10.1 User define function 4.10.2 Built-in Function (ABS(), Rand(), Max(), Min(), eval(), parseInt(), parseFloat()) 4.11 JS Arrays 4.12 JS If Else 4.13 JS Switch 4.14 JS For Loop 4.15 JS While Loop		
	Total	20	120

Lab Requirements **(Hardware / Software)**	**Computer Core i3 at least** **04 GB RAM** **320 GB HD** **Internet Connection** **Gmail account** **Notepad++** **Microsoft Visual Code (Latest Edition)**
List of Practical	• Installation of Notepad++ • Visual Studio Installation • HTML HEAD, TITLE, FAVICON TAGS • Usage of STYLE & SCRIPT TAGS • HTML Heading Tags Demonstration i.e. H1-H6 • HTML BODY TAG & ITS ATTRIBUTES • USAGE OF FONT & PARAGRAPH TAGS • DEFINE TABLES IN HTML • INSERT IMAGES IN HTML • USE LISTS IN HTML • USE DIV TAGS • DEFINE IFRAME, AUDIO & VIDEOS • Define HTML Internal / External Linking • Create HTML Form • Apply CSS styles on Text, Font, Lists • APPLYING CSS ON TABLE, IMAGES • Usage of BORDER & MARGIN ON different elements • Dropdown & Navigation bar • Use JavaScript for data entry • Variables. Constants & Data types • Different conditional Statements like if, if-else & Switch • Usage of Loops i.e. for & while • Use JavaScript Dialog boxes, Like Prompt, Input, Warnings • Use JavaScript Validation • Define functions in JavaScript
Reference Material	• W3School • HTML, DHTM, JAVASCRIP & PERAL by Ivan Bayross • HTML 5 COMPLETE REFERENCE • WEB DESIGN WITH HTML & CSS by Jeremy Osborn, Jennifer Smith, and the AGI Training Team

Graphics Design

(DIT Part-II)

Total Marks:	100	Theory Marks:	75	Practical Marks	25
Total Weeks:	20				
Contact Hours per week:	06				
Total Contact Hours:	120				
Theory Hours:	40				
Practical Hours:	80				

GENERAL OBJECTIVES:

After the completion of this course, students are expected to be able:

- To Understand the Adobe Photoshop and Coral Draw in different environment.
- To Design different logos, images and understand colors.
- To work with organization and industries
- To be able to write Urdu in digital environment.

Module	Course Contents	Allotted Weeks	Contact Hours
	Adobe Photoshop 2016		
01	**EXPLORING THE PHOTOSHOP ENVIRONMENT** 1.1. Explore the Photoshop interface 1.2. Customize the Workspace 1.3. Explore the Navigation Tools	01 Week	06
02	**WORKING WITH IMAGE AREAS** 2.1 Select Image Areas 2.2 Save a Selection 2.3 Modify a Selection 2.4 Setting Color Space 2.4.1 Calibrate and Profile your Monitor 2.4.2 Set a Working Color Space in Photoshop 2.4.3 Convert Image from one Color Space to Another 2.4.4 Manage Printing and Color 2.5 Enhancing Image 2.5.1 Print Strokes on an Image 2.5.2 Apply Filter Effects 2.5.3 Convert an Image to Black and White 2.5.4 Blend Layers 2.5.5 Merge Layers and Flatten Image 2.5.6 Convert Color Images to Grayscale	02 Weeks	12
03	**WORKING WITH LAYERS** 3.1 Create Layers 3.2 Create Type Layers 3.3 Transform Layers 3.4 Alter Type Properties 3.5 Apply Layer Styles 3.6 Undo Previous Steps 3.7 Arrange and Group Layers	01 Week	06
04	4.1 Saving Images for Web and Print 4.1.1 Save Images for Use in Print Application 4.1.2 Save Images for the Web 4.1.3 Save Images as PDF 4.2 Managing Assets with Adobe@ Bridge 4.2.1 Explore Adobe Bridge 4.2.2 Work with Adobe Bridge 4.2.3 Work with Stacks and Filters in Adobe Bridge 4.2.4 Apply Metadata and Keywords to Files 4.2.5 Preparing Web Images 4.2.6 Change Measurement Units 4.2.7 Reduce File Size 4.3 Creating Web Page Layouts 4.3.1 Simulate a Web Page 4.3.2 Create Web Page Background 4.3.3 Draw Editable Vector Shapes 4.3.4 Create Effects 4.3.5 Export a Web Page	02 Weeks	12
05	5.1 Enhancing Photographs	03	12

	5.1.1 Retouch Photographs Using Photoshop Tools 5.1.2 Create Patterns 5.1.3 Create Swatches and Gradients 5.1.4 Create a Custom Brush 5.1.5 Create Custom Patterns 5.2 Creating Special Effects 5.2.1 Preview Text Effects Using Layer Comps 5.2.2 Warp an Image 5.3 Automating Tasks 5.3.1 Create an Action 5.3.2 Manage Action 5.4 Adjusting RGB Color 5.4.1 Meet Color Correction Objective 5.4.2 Locate Highlights Shadows and Neutral Areas 5.4.3 Make Automatic Color and Contrast Adjustment 5.4.4 Make Basic Curve Adjustment 5.5 Sharpening Images 5.5.1 Apply Un-sharp Images 5.5.2 Sharpen an Image	Weeks	
Coral Draw 2016			
06	**BASICS:** 6.1 Exploring the Corel DRAW Interface 6.2 Setup Drawing Page 6.3 Corel DRAW Basic 6.4 Manage Workspaces 6.5 Customizing the Command Bar 6.6 Saving and Printing Drawing	02 Week	06
07	7.1 Shapes and Lines: 7.1.1 Basic Shapes 7.1.2 Working with Paths 7.1.3 Modify Paths 7.1.4 Adding Text to Objects 7.2 Colors 7.2.1 Fills and Outline 7.2.2 Custom File 7.2.3 Custom Strokes 7.2.4 Drop Shadows 7.2.5 Modify Outline 7.2.6 Transform Objects	01 Week	06
08	8.1 **Working with Text** 8.1.1 Format Artistic Text 8.1.2 Fit Text to a Path 8.1.3 Create Paragraph Text 8.1.4 Wrap Paragraph Text 8.1.5 Modify OCT Text 8.1.6 Importing Image Text 8.1.7 Insert Special Characters 8.1.8 Text Effects 8.2 Working with Objects	02 Weeks	12

	8.2.1 Modify Objects 8.2.2 Add Graphics 8.2.3 Add Clipart 8.2.4 Spray Objects 8.3 Styles, Templates Symbols 8.3.1 Working with text Styles 8.3.2 Working with Templates 8.3.3 Create Symbols		
09	9.1 Layers 9.1.1 New Layers 9.1.2 Manipulate Layer 9.2 Bitmaps 9.2.1 Import and Adjust Bitmaps 9.2.2 Trace Bitmaps 9.3 Advanced Printing Options 9.3.1 Edit a Print Style 9.3.2 Merge Text with Drawing	02 Weeks	12
10	**Urdu Inpage** 10.1 Toggle English / Urdu 10.2 Tools 10.3 Ribbon 10.4 Status Bar 10.5 Rulers 10.6 Document Area 10.7 Scroll Bars 10.8 Cursors 10.9 Text Box 10.10 Title Text Box 10.11 Picture Box 10.12 Graphic Box 10.13 Line 10.14 Guides 10.15 Text Chain	04 Weeks	24
	Total	20	120

Lab Requirements **(Hardware / Software)**	Adobe Photoshop 2016, Coral Draw 2016
List of Practical	1. Customize pictures 2. Design Visiting Card 3. Design Brochure 4. Design Book Front Page 5. Design Banners 6. Design Logos 7. Design ID Card 8. Design Social Media Post 9. Design letter paid 10. Design Stamp
Reference Material	• GFX Mentor • www.adobe.com

Capstone Project

(DIT Part-II)

Total Project Marks:	100
Total Weeks:	20
Contact Hours per week:	06
Total Contact Hours:	120 Hours (Supervisor Guidance + Project Report)

GENERAL OBJECTIVES:

After the completion of this course, students are expected to be able to:

- Apply the learned concepts in real world situations.
- Identify a computational problem that can be solved through software.
- Design software solutions for organizational or individual computational problems.
- Format a problem and its solution in a documented form.
- Develop skills for testing the quality of an application software.
- Sell his/her skills in the freelancing market.

S. No	PROJECT ACTIVITIES	Allotted Weeks	Contact Hours
1	Exploring following fields for finding a problem. 1. Application Development using Python 2. Database Development 3. Web Application Development 4. Graphic Design	02 weeks	12
2	Understanding the selected problem in detail	02 weeks	12
3	Developing Solution for the selected problem	10 weeks	60
4	Testing the developed solution	02 weeks	12
5	Modification/Changes in the solution (if required)	02 weeks	12
6	Preparation of Project Report	02 weeks	12

English-I
(Part-III)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Sr. No	Unit No.	Description / Main Topics	Allotted Week(s)
01	01	Responsibilities of the Youth	02 Weeks
02	02	His First Flight	02 Weeks
03	05	Its Country for Me	02 Weeks
04	06	Mother to Son	01 Week
05	07	Choice of Career	01 Week
06	8	Wasteland	02 Weeks
07	9	The White Lamb	02 Weeks
08	17	What You Do Is What You Are	02 Weeks
09	18	A Dream Within a Dream	01 Week
10	19	Drug Abuse in the Youth of Pakistan	02 Weeks
11	20	How to Take a Job Interview	02 Weeks
12	21	The Road Not Taken	01 Week

Important Note: -

i. All the units / chapters along with activities related to oral communication, suggestions regarding reading, writing and grammar must be completed as described above against the name of each unit.

ii. All the activities regarding practice of oral communication, vocabulary and grammar skills of the excluded lessons/units should be retained and taught with other relevant exercises.

iii. Writing activities of the included lessons/units must be sufficiently practiced.

Source: A Textbook of English Grade 11, Khyber Pakhtunkhwa Textbook Board, Peshawar.
Author: Prof. Hameedullah Khan, Ex-Principal, GDC, Hayatabad

Urdu-I

(Part-III)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

ISLAMYAT

(Part-III)

Total Theory Marks:	50
Total Weeks:	20
Contact Hours per week:	03
Total Contact Hours:	60

(درسی کتاب) اسلامیات لازمی (خیبر پختو نخواہ ٹیکسٹ بُک بورڈ پشاور) گیارھویں جماعت کیلئے

دورانیہ	عنوانات	باب
پہلے چار ہفتے 12 کلاسز	**تعارف اسلام-بنیادی عقائد** **1 . توحید:-** وجود باری تعالیٰ، توحید ذات (صفات)، شرک کی اقسام، انسانی زندگی پر عقیدہ توحید کے اثرات (خودداری، انکساری، وسعت نظر، استقامت و بہادری، امید و اطمینان قلب، پرہیز گاری، توکل علی اللہ **2 . عقیدۂ رسالت:-**وحی، رسول کی ضرورت، انبیاء کی خصوصیات، رسالتِ محمدی کی خصوصیات، ناموسِ رسالت و ختمِ نبوت **3 . ملائکہ پر ایمان:-**تعارف، خصوصیات، ذمہ داریاں ، مقرب فرشتے **4 . آسمانی کتابیں:-** تعارف، آخری آسمانی کتاب اور اسکی خصوصیات **5 . عقیدۂ آخرت:-** تعارف، منکرینِ آخرت کے اعتراضات وجوہات، اہمیت، جزا و سزا، انسانی زندگی پر عقیدۂ آخرت کے اثرات	باب اول اسلام کے بنیادی عقائد
6 ہفتے 18 کلاسز	**اسلامی تشخص و عبادات** **1 . ارکانِ اسلام:-** کلمہ شہادت، تعریف و توضیح **2 . نماز:-**قرآن و سنت کی روشنی میں اہمیت و فضیلت، تاکید اور فوائد **3 . روزہ:-**تعارف، اہمیت و فضیلت، مقصد، فوائد **4 . زکوٰۃ:-** تعارف، اہمیت و فضیلت، معاشی ومعاشرتی فوائد، مصارف، نصاب **5 . حج:-** تعارف، فرضیت، اہمیت و فضیلت، فوائد **6 . جہاد:-** تعارف، اقسام، فضائل **7 . اللہ تعالیٰ اور رسول اللہ ﷺ کی محبت و اطاعت:-**اللہ تعالیٰ کے احسانات، رسول اللہ ﷺ کے احسانات ، شرطِ محبت اطاعتِ رسول **8 . حقوق العباد:-** والدین، اولاد، میاں بیوی، رشتہ دار، اساتذہ ، ہمسایہ اور غیر مسلموں کے حقوق **9 . معاشرتی ذمہ داریاں:-** دیانتداری، ایفائے عہد،سچائی، عدل و انصاف، احترامِ قانون، کسبِ حلال، ایثار ۔ **اخلاقی رذائل: -(**جھوٹ، غیبت، منافقت، تکبر، حسد)	باب دوم اسلامی تشخص و عبادات
4 ہفتے	**اُسوہ رسول اکرم ﷺ** رسول کریم ﷺ بحیثیتِ رحمت للعالمین (امت، کافروں، عورتوں، بچوں، یتیموں اور غلاموں کے لئے رحمت)	باب سوم اُسوہ رسول اکرم ﷺ

دورانیہ	عنوانات	باب
12 کلاسز 4 ہفتے 12 کلاسز آخری دو ہفتے 6 کلاسز	**اَخلاق حسنہ:-** اخوت، مساوات، صبر و استقلال، عفو و درگزر، ذکر **تعارف قرآن:-** اسماء القرآن، فضائلِ قرآن، نزولِ قرآن، مکی و مدنی سورتیں، حفاظت و تدوینِ قرآن جمع و تدوینِ قرآن عہدِ صدیقی میں جمع و تدوینِ قرآن عہدِ عثمانی میں **حدیث و سنت:-** تعارف، حدیث کی اقسام، حدیث کی شرعی حیثیت، تدوینِ حدیث فہرست صحاحِ ستہ اور اُصول اربعہ، مصنفین کے نام 10 منتخب آیات کریمہ کا ترجمہ بمعہ تشریح 10 منتخب احادیث کا ترجمہ بمعہ تشریح (درسی کتاب کے آخر میں تحریر ہیں) اہم موضو عات کی دہرائی، سابقہ پرچہ جات کا حل، ٹیسٹ کا انعقاد	باب چہارم تعارفِ قرآن وحدیث

نام کتاب:- اسلامیات لازمی خیبر پختو نخواہ ٹیکسٹ بُک بورڈ ، پشاور

Mutalae Quran-e-Hakeem

(Part-III)

Total Theory Marks: 50

Total Weeks: 20

Contact Hours per week: 03

Total Contact Hours: 60

نمبر شمار	سورۃ		عنوانات	ہفتے اور ہفتہ وار کلاسیں
۱	سورۃ بقرۃ	i	رکوع نمبر 01 تا 03 متن ترجمہ آیات 01 تا 29	07 ہفتے 21 کلاسیں
		ii	رکوع نمبر 08 تا 09 متن ترجمہ آیات 62 تا 82	
		iii	رکوع نمبر 15 تا 16 متن ترجمہ آیات 121 تا 141	
		iv	رکوع نمبر 21 تا 23 متن ترجمہ آیات 168 تا 188	
		v	رکوع نمبر 27 تا 31 متن ترجمہ آیات 216 تا 242	
		vi	رکوع نمبر 37 تا 40 متن ترجمہ آیات 274 تا 286	
۲	سورۃ آل عمران	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 20	
		ii	رکوع نمبر 12 تا 14 ، متن ترجمہ آیات 110 تا 143	تین ہفتے 9 کلاسیں
		iii	رکوع نمبر 18 تا 20 متن ترجمہ آیات 172 تا 200	
۳	سورۃ الانفال	i	رکوع نمبر 05 تا 07 متن ترجمہ آیات 38 تا 58	02 ہفتے 6 کلاسیں
		ii	رکوع نمبر 09 تا 10 متن ترجمہ آیات 65 تا 75	
۴	سورۃ توبہ	i	رکوع نمبر 01 تا 02، متن ترجمہ آیات 01 تا 16	تین ہفتے 9 کلاسیں
		ii	رکوع نمبر 05 تا 06، متن ترجمہ آیات 30 تا 42	
		iii	رکوع نمبر 13 تا 16 ، متن ترجمہ آیات 100 تا 129	
۵			مشقی سوالات	3 ہفتے 9 کلاسیں
۶			(امتحانات کی تیاری)	2 ہفتے

نام کتاب:۔ مطالعہ قرآن حکیم خیبر پختو نخواہ ٹیکسٹ بُک بورڈ ، پشاور

MATHEMATICS-I

(Part-III)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

S. No	Unit No. & Title	Main Topics & Sub Topic	Allotted Weeks
01	1. **Complex Numbers**	1.1 Introduction of: i) Real and imaginary numbers ii) Equality of Complex numbers iii) Conjugate of a complex number iv) Basic algebraic operation on complex numbers v) Absolute value or modules of a complex number 1.2 Properties of complex numbers i) Additive properties ii) Multiplication properties iii) Additive identity and multiplicative identity of complex numbers iv) Additive inverse and multiplicative inverse of complex number v) Some properties of the conjugate and modules of complex number vi) Real and imaginary parts of the complex number of the form a) $(x+iy)^n$ b) $(\frac{x_1+iy_1}{x_2+iy_2})$, where $x_2 + iy_2 \neq$ o and n= ± 1 and n = ± 2. 1.3 Solution of equations i) Solution of simultaneous Liners equation with complex coefficients. ii) Expression of the polynomial as a product of linear factors. iii) Quadratic equation of the form $pz^2 + qz + r = 0$	03 Weeks
02	2**. Matrices and Determinants**	2.1 Introduction of: i) Concept of a matrix and its notation ii) Types of matrices 2.2 Algebra of Matrices i) Addition of matrices, subtraction, scalar multiplication and multiplication of matrices	03 Weeks

		ii) Commutative property iii) Verification of $(AB)^t = B^t + A^t$ 2.3 Determinants i) Minor and cofactor of an element of a matrix or its determinant. ii) Determinants of a square matrix of order $n \geq 3$ iii) Singular matrix and nonsingular matrix of order n ≥ 3 iv) Adjoint of a square matrix of order n ≥ 3 v) Use adjoint method to calculate inverse of a square matrix of order n ≥ 3 2.4 Properties of Determinants i) State and prove properties of determinants ii) Evaluate the determinant without expansion (i-e using properties of determinants). 2.5 Row and column operations i) Row operations on matrices ii) Echelon and reduced echelon form of a matrix iii) Reduce a matrix to its echelon and reduced echelon form iv) Rank of a matrix v) Using elementary row operation (ERO) to find the inverse and the rank of a matrix. 2.6 System of Linear equations i) Homogeneous and non-homogenous Linear equation ii) Solution of three Homogenous Linear equations in three unknowns iii) Consistency and inconsistency of a system of equations iv) Solution of non-homogenous Linear equations: a) Matrix Inversion method b) Gauss elimination method c) Gauss Jordan method d) Cramer's rule	
03	**4. Sequences and Series**	4.1 Introduction of: i) Sequences ii) Construction of a sequence from a formula iii) Some special sequences. 4.2 Arithmetic Sequence (A.P) i) The n^{th} term of an Arithmetic sequence 4.3 Arithmetic Mean i) Arithmetic mean of two numbers ii) Inserting n Arithmetic means. 4.4 Arithmetic Series i) General form of arithmetic series ii) Sum of first n term of an arithmetic series iii) Ratio of A.M of two numbers with n A. Ms between them iv) Real life problems involving arithmetic series. 4.5 Geometric sequence i) General term of geometric sequence	02 Weeks

		ii) The nth term of a Geometric sequence 4.6 Geometric Mean (G.M) i) Geometric Mean of two numbers ii) Insert n Geometric mean between two numbers a and b. 4.7 Geometric Series i) General form of a geometric series ii) Sum of first n terms of a geometric series iii) Real life problems involving geometric series 4.8 Harmonic Sequence i) Definition of Harmonic sequence ii) Finding nth term of Harmonic sequence 4.9 Harmonic Means (H.MS) i) Harmonic mean between two numbers ii) Find relation among Arithmetic, Geometric and Harmonic Means	
04	**6.Permutation, Combination and Probability**	6.1. Factorial of a Natural Number (i) Know Kramps factorial notation to express the product of first *n* natural number by *n*! 6.2. Permutation (i) Recognize the fundamental principle of counting and illustrate this principle using tree diagram. (ii) Explain the meaning of permutation of *n* different objects taken r at a time and know the notation ${}^{n}P_{r}$ (iii) Prove that ${}^{n}P_{r} = n(n\text{-}1)\,(n\text{-}2)\ldots(n\text{-}r\text{+}1)$ and hence deduce that • ${}^{n}P_{r} = \frac{n!}{(n-r)!}$, • ${}^{n}P_{r} = n!$, • $0! = 1$ (iv) Apply ${}^{n}P_{r}$ to solve relevant problems of finding the number of arrangements of *n* objects taken *r* at a time (when all *n* objects are different and when some of them are alike). (v) Find the arrangement of different objects around a circle. 6.3 Combination (i) Define combination of n different objects taken *r* at a time. (ii) Prove the formula ${}^{n}C_{r} = \binom{n}{r} = \frac{n!}{r!\,(n-r)!}$, and deduce that • $\binom{n}{n} = \binom{n}{0} = 1$, • $\binom{n}{r} = \binom{n}{n-r}, \binom{n}{1} = \binom{n}{n-1} = n$	02 Weeks

		• $\binom{n}{r} + \binom{n}{r-1} = \binom{n+1}{r}$. (iii) Solve problems involving combination. 6.4. Probability (i) Define the Following • statistical experiment, • sample space and an event, • mutually exclusive events, • equally likely events, • dependent and independent events, • simple and compound events. (ii) Recognize the formula for probability of occurrence of an event E, that is $P(E) = \frac{n(E)}{n(S)}$, $0 \le P(E) \le 1$. (iii) Apply the formula for finding probability in simple cases. (iv) Recognize the addition theorem (or law) of probability: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$, where A and B are two events. Deduce that $P(A \cup B) = P(A) + P(B)$ where A and B are mutually exclusive events.	
05	**7.Methmatical Induction and Binomial Theorem**	7.1 Introduction i) The principle of Mathematical induction ii) General form of principle of mathematical induction Define Index Numbers. 7.2 The Binomial Theorem i) Statement and proof of the Binomial Theorem ii) Properties of Binomial Expansion iii) Pascal's Triangle 7.3 Binomial Series i) Expansion of $(1+x)^n$, where n is a positive integer. ii) Expansion of $(1+x)^n$ where n is a negative integer or a fraction.	02 Weeks
06	**08. Functions and Graphs**	8.1 Introduction i) Basic concept of function ii) Function as a rule or correspondence iii) Domain and rang of a function iv) One to one and onto functions v) Linear, Quadratic and sequence root functions. 8.2 Inverse Function i) Definition ii) Domain and rang of inverse functions 8.3 Graphical Representation of Functions i) Sketch graph of: • Linear Functions (e.g. y = ax +b) • Non-Linear functions (e.g. $y = x^2$) ii) Sketch the graph of function $y = x^n$, where n is • a +ve integer • a –ve integer ($x \neq 0$)	02 Weeks

		• a rational number for x > o iii) Sketch graph of quadratic function of the form $y = ax^2 + bx + c, a \neq o, b, c$ are integers iv) Using factors to sketch graphs v) Predicting functions form their graphs 8.4 Intersecting Graphs i) Point of intersection of a linear function and coordinate axes ii) Point of intersection of a linear function and a quadratic function iii) Graphical solutions of problems from daily life.	
07	**09. Linear Programming**	9.1. Introduction i) Define Linear programming (LP) as planning of allocation of limited resources to obtain an optimal result. 9.2 Linear Inequalities i) Solve linear inequalities in one variable ii) Interpret graphically the linear inequalities in two variables iii) Determine graphically the region bounded by 2 or 3 simultaneous inequalities. 9.3 Feasible Region i) Define • Linear programming problems • Objective function • Problem constraints • Decision variable 9.4 Optimal Solution i) Define optimal solution of an LP problem ii) Procedure for determining optimal solution iii) Solve Real life LP problems	03 Weeks
08	**10. Trigonometric Identities of sum and Difference of angles**	10.1 Introduction i) Fundamental law of trigonometry ii) Deductions from the fundamental law of trigonometry 10.2 Trigonometric Ratios and Allied Angles i) Derivation of trigonometric ratios of allied angles ii) Writing $a \sin\theta + b\cos\theta$ in the form of $r\sin(\theta + \emptyset)$ where $a = r\cos\emptyset$ and $b = r\sin\emptyset$ 10.3 Double, Half and triple angle identities i) Double angle identities ii) Half angle identities iii) Triple angle identities 10.4 Sum, Difference and product of sine and cosine i) Converting product to sums or differences ii) Converting sums or differences to products	03 Weeks
		Total Weeks	**20**

Recommended Book:

Mathematics for Grade XI, by KP Textbook Board Peshawar.

Economics-I
(Part-III)

Total Theory Marks:	100
Total Weeks:	20
Contact Hours per week:	06
Total Contact Hours:	120

General Objectives:

The General Objective of the course is to equip the students with solid knowledge, understanding of real-world example, and practical application of Microeconomics issue and to enable them to demonstrate their ability to apply economic theory to a range of economic problems and effectively communicate their analysis. To enables the students of economics to become pro economics & stability in the country.

AIMS:

1. To understand the economic values in life.
2. To acquaint with the economic development with the object to understand the main socio-economic and political events of modern world.
3. To familiarize the students about the revolutionary economic development of modern world and its importance.
4. To analyze the role of economic factors responsible for the rise and fall of nations.
5. To analyze the role of economically strong powers in the world politics.
6. To acquaint the students with the economics development of Pakistan modern world.

Objectives:

1. To enable the students to become responsible and productive citizen.
2. To familiarize the students with the basic philosophy of Islamic Economic System and its role in poverty alleviation and income generation.

3. To highlight factors which further the economic development of Pakistan thereby ensuring better quality of life, greater employment opportunities and increased output.

4. To develop amongst the students a sense of civic responsibilities, spirit of honesty, dignity of labour and earing one's living by fair means.

5. To enable the students to appreciate the difference between various economic system in comparison with the basic economic philosophy of Islam.

6. To inculcate in students, the gratitude to Allah Almighty for his all blessings and to work for national cohesion and solidarity and for creating a society based on equity and equitity.

A: Micro Economics

Chapter No	Main Topics	Allotted Weeks	Relevant with KP Curriculum
Chapter-1	**Definition of economics and Basic Concepts** - Economic problem, Scarcity and Choice - Wants: Economic and Non-Economic only definitions - Wealth: Definition - Goods: Economic and Non-Economic only definitions - Necessities, comports and luxuries - Definitions of economics and its characteristics by: - Adam smith - Alfred Marshall - Lionel Robbins. - Inter Comparison of Definitions - Branches of Economic (Micro & Macro) - Scope of Economics	03 Weeks	Chap#1: 1, 2,3,4,5
Chapter-2	**Consumer's Behaviour** - Utility and its types - Law of diminishing marginal utility schedule and diagram and practical importance. - Law of Equi-marginal utility schedule and diagram**,** and practical importance. - Consumer Equilibrium - Define Indifference Curve and its properties.	02 Weeks	Chap# 2 1,2,3,4
Chapter-3	**The Theory of Demand** - Definition of Demand. - Law of demand. - Extension, contraction, rise, and fall in demand. - Kinds of Elasticity of Demand - Price elasticity, Degrees of price elasticity of demand - Income elasticity - Cross-price elasticity	03 Weeks	Chap# 3 1,3,5, 6, 7,8, 10
Chapter-4	**The Theory Supply** - Definition of Supply. - Law of Supply Extension, contraction, rise and fall in supply - Kinds of Elasticity of Supply	02 Weeks	Chap# 4 1,2,5,6
Chapter-5	**Market Equilibrium**	02 Weeks	Chap# 5

	- Concept of Equilibrium - Equilibrium price and output determination in the market. - The effect of changes of demand and supply on market equilibrium price and equilibrium quantity.		1,3
Chapter-6	**Production & Rewards** - Definition of production and factors of production - Land and its properties - Labour and its properties - Capital and its properties - Entrepreneur and its properties - Definitions of rent and its kinds - Definition of wage, nominal and real wage - Labour union and its purposes. - Definition of interest, gross interest and net interest - Definition of profit, gross and net profit - Difference between interest and profit.	04 Weeks	Chap# 6 2,5,6,7
Chapter-7	**Cost and Revenues Concepts, schedules and Diagrams** - Total cost - Variable Cost - Fixed Cost - Marginal Cost - Revenue - Total Revenue - Marginal Revenue - Average Revenue	02 Weeks	Chap# 7 1,3,6,7
Chapter-8	**Markets** - Definition of market - Concept of perfect Competitive market, its assumptions - Definition of Monopoly its characteristics	02 Weeks	Chap# 8 1,2

Medium of Instructions: English/Urdu

Minimum Qualification of Instructor: Master in Economics/BS Economics

Recommended Books:

1. Economics by Punjab Curriculum & Text Book Board Lahore (Part-11) (For Urdu Medium)
2. Economics by M. Saeed Nasir (For English Medium)

STATISTICS-I

(Part-III)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Chapter No / Module	Main Topics & Sub Topic	Allotted Weeks
1. **Collection and Presentation of Data**	1.1 Introduction i) Define Statistics, types of Statistics, ii) Define Population and sample, parameter and statistic 1.2 Variable i) Define Constant and Variable ii) Describe the types of variable, differentiate between qualitative and quantitative variables. 1.3 Statistical Data i) Define Statistical Data, types of statistical data, differentiate between qualitative and quantitative data, Differentiate between Discrete and continuous data. ii) Define primary and secondary data. 1.4 Presentation of Statistical Data i) Condensation of data through • Data array • Through classification and tabulation • By diagrammatic representation ii) Define Class, Class frequency, Frequency Distribution, class Boundaries, class width, class mark. iii) Define and construct cumulative frequency distribution. iv) Describe diagrammatic /graph representation of data. v) Define and Construct • Simple Bar Chart • Multiple Bar Chart • Pie Chart vi) Define and Construct • Histogram • Frequency Polygon	03 Weeks
2**. Measures of Central Tendency**	2.1 Central Tendency i) Define Central Tendency ii) Define an average and list its types 2.2 Arithmetic Mean i) Define Arithmetic Mean ii) Calculate Arithmetic Mean for individual observation (raw data) iii) Calculate Arithmetic Mean for group data	03 Weeks

	2.3 Median i) Define Median, quartiles, Deciles and percentiles. ii) Determine • Median and quantiles for ungrouped data • Median and quantiles for grouped data 2.4 Mode i) Define Mode and discuss its properties ii) Calculate Mode for: • Individual Observation (raw data) • Grouped data. 2.5 Geometric Mean i) Define Geometric Mean ii) Identify merits and demerits of geometric mean iii) Calculate geometric mean for • Ungrouped data • Grouped data 2.6 Harmonic Mean i) Define Harmonic Mean and discuss its properties ii) Calculate Harmonic Mean for • Ungrouped data • Grouped data	
3. Measures of Dispersion	3.1 Dispersion i) Define dispersion ii) Know, what the measure of dispersion is iii) Identify absolute and relative measures of dispersion • Range and coefficient of range • Quartiles deviation and coefficient of quartile deviation • Mean deviation and coefficient of mean deviation • Standard deviation and coefficient of variation 3.2 Range i) Define Range and its coefficient. ii) Determine the range and coefficient of range for • Individual observation (Ungrouped data) • Grouped data 3.3 Quartile Deviation i) Define Quartile deviation and its coefficient. ii) Calculate the quartile deviation and tis coefficients for • Ungrouped data • Grouped data 3.4 Mean Deviation i) Define Mean deviation and coefficient of mean deviation; • From Mean • From Median ii) Calculate the Mean Deviation: • From Mean (Ungrouped data) • From Median (Ungrouped data) • From Mean (Grouped data) • From Median (Grouped data)	03 Weeks

	3.5 Standard Deviation i) Define Variance, Standard deviation and coefficient of variation. ii) Determine the properties of variance and standard deviation. iii) Calculate variance, standard deviation and coefficient of variation for individual observations (raw data) iv) Calculate variance and standard deviation and its coefficient for grouped data	
4. Index Number	4.1 Index Number i) Define Index Numbers. ii) Describe the Steps involved in the construction of whole sale price numbers. iii) Define Simple and composite price index numbers. iv) Calculate Simple Price Index numbers: • By fixed base method. • By Chain base method. v) Calculate composite price index numbers using the method of simple aggregates. vi) Describe the method of simple average of price relations. vii) Calculate composite price index using the method of simple average of price relations. viii) Define Weighted aggregate price index numbers. ix) Calculate weighted aggregative price index numbers using: • Laspeyer's Formula • Paache's Formula • Fisher's Formula	03 Weeks
05. Simple Liner Regression and Correlation	5.1 Simple Linear Regression i) Define Simple Regression ii) Define Dependent and independent variables iii) Define scatter diagram iv) Describe the least square principle v) Estimate the regression line using the method of least squares and interpret the regression coefficient. 5.2 Simple Correlation i) Define Simple Correlation between two random variables. ii) Describe: • Positive correlation • Negative Correlation • No Correlation iii) Define Pearson Product moment correlation coefficient. iv) Calculate Pearson product moment correlation coefficient for two variables.	03 Weeks
06. Time Series	6.1. Time Series i) Define Time Series ii) Define and construct historigram. iii) Describe the components of time series. • Secular Trend • Seasonal trend • Cyclical trend • Irregular trend	03 Weeks

	6.2 Measurement of secular trend i) Describe and apply the method of free hand curve to measure the secular trend. ii) Describe and apply the method of semi average to measure secular trend. iii) Describe and apply the method of moving averages to measure the secular trend.	
07. Interpolation	7.1 Interpolation i) Define Interpolation and extrapolation ii) Identify arguments and entries in a given table of values iii) Differentiate between equally spaced and un-equally spaced data. iv) Define 'Δ ' as forward difference operator v) Construct forward difference table from a given equally spaced data. 7.2 Newton's Forward Difference Interpolation Formula i) Describe Newton's Forward difference interpolation formula. ii) Use Newton's Forward difference interpolation formula to find interpolating polynomial for a given equally-spaced data. 7.3 Lagrange's Interpolation Formula i) Describe Lagrange's Interpolation formula ii) Use Lagrange's Interpolation Formula to find interpolating polynomial for a given equally-spaced or un-equally spaced data.	02 Weeks

Reference Book:

Textbook for Grade XI, KP Textbook Board Peshawar.

PHYSICS-I

(Part-III)

Total Marks: 100 (Theory 85 Marks Practical 15 Marks)

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Course Outlines

Chapter No / Module	Main Topics & Sub Topic	Allotted weeks
1	Measurement	2 Weeks
2	Vectors and Equilibrium	2 Weeks
3	Forces and Motion	2 Weeks
4	Work and Energy	2 Weeks
5	Rotational and Circular Motion	2 Weeks
6	Fluid Dynamics	2 Weeks
7	Oscillations	2 Weeks
8	Waves	2 Weeks
9	Physical Optics	2 Weeks
10	Thermodynamics	2 Weeks

English-II
(Part-IV)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Sr. No	Unit No.	Description / Main Topics	Allotted Week(s)
01	01	Seerat-e-Tayyiba and the Muslim Youth	02 Weeks
02	02	Jinnah's Vision of Pakistan	02 Weeks
03	03	Solitary Reaper (Poem)	02 Weeks
04	05	The Last Leaf	02 Weeks
05	08	Lesson From Battle Uhud	02 Weeks
06	09	The Toys (poem)	02 Weeks
07	11	Jahangir Khan The Conqueror	02 Weeks
08	12	All the World's a Stage (Poem)	02 Weeks
09	13	Technical Education	02 Weeks
10	18	Lines From the Deserted Village	02 Weeks

Important Note: -

i. **All the units along with activities related to oral communication, suggestions regarding reading, writing and grammar must be completed**.
ii. All the activities regarding practice of oral communication, vocabulary and grammar skills of the excluded lessons/units should be retained and taught with other relevant exercises.
iii. Writing activities of the included lessons/units must be sufficiently practiced.

Source: A Textbook of English Grade 12, Khyber Pakhtunkhwa Textbook Board, Peshawar.

Urdu-II

(Part-IV)

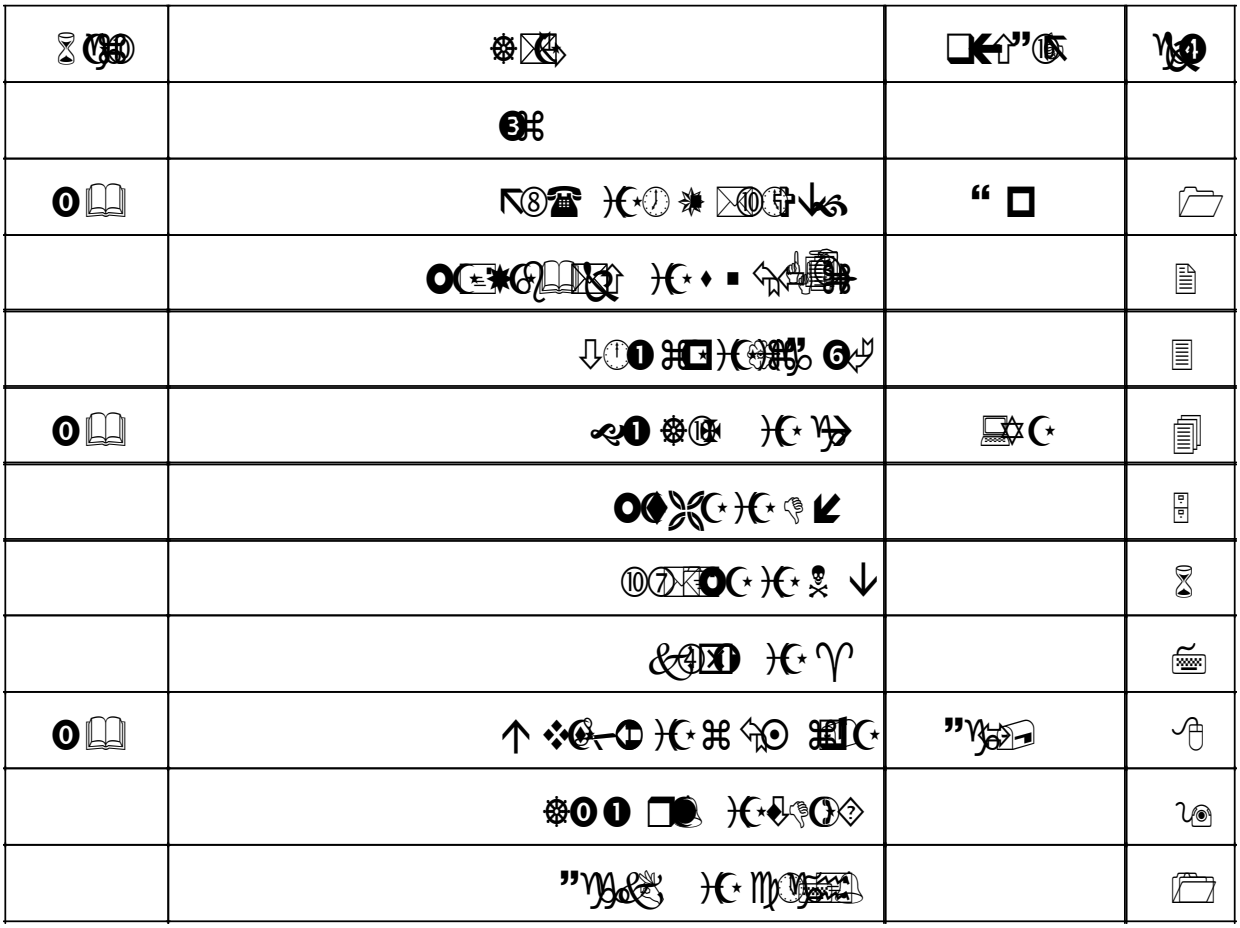
Total Theory Marks: 100

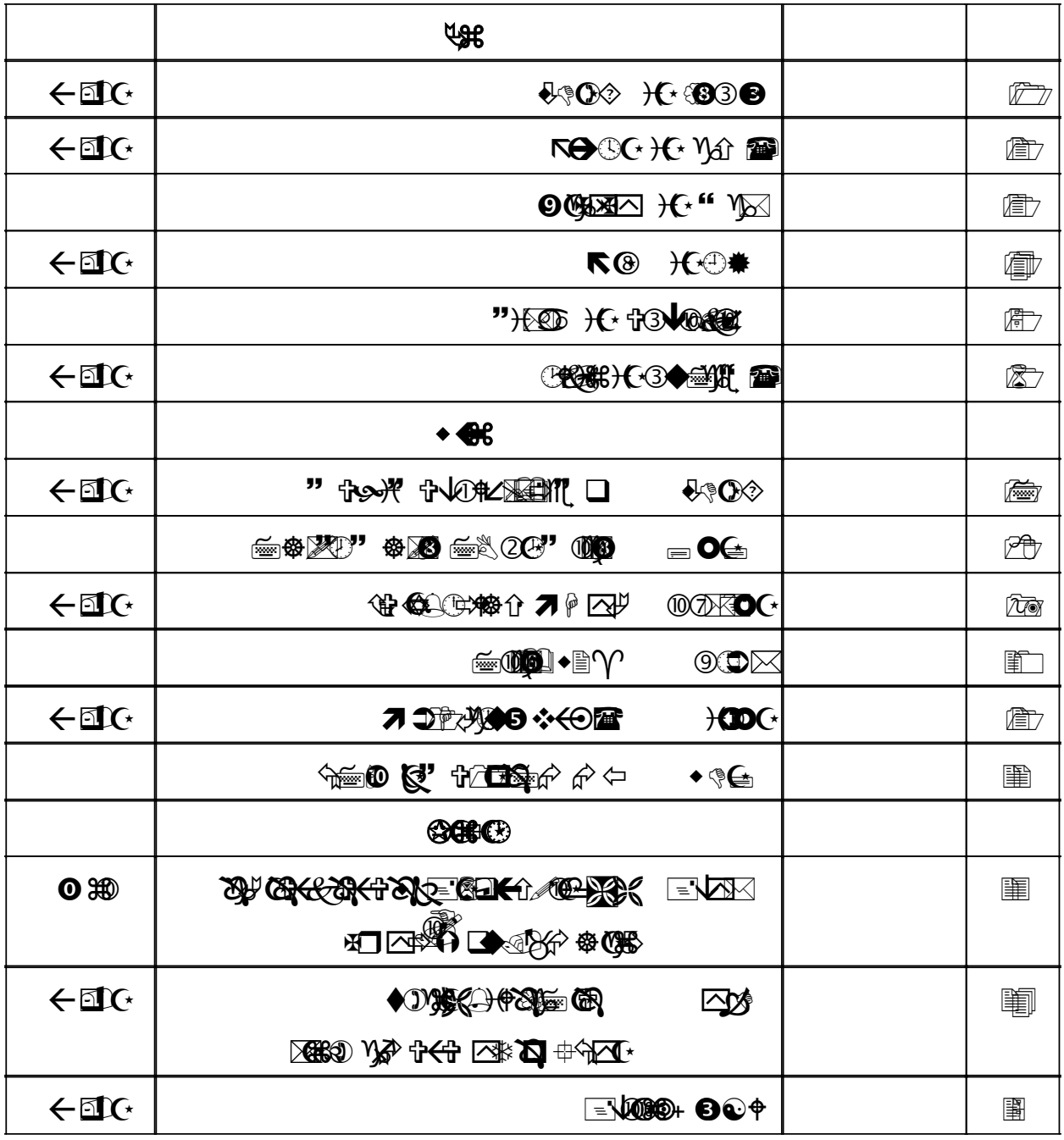
Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120







PAKISTAN STUDIES

(Part-IV)

Total Theory Marks: 50

Total Weeks: 20

Contact Hours per week: 03

Total Contact Hours: 60

Chapter No. / Module	Main Topics	Allotted Weeks
01-Ideology of Pakistan.	1.1. Ideology of Pakistan i. Importance of an Ideological basis of Pakistan, definition and explanation, two nation theory, Concept Aims and objectives, Historic perspective and evolution of Pakistani Ideology. 1.2. Struggle for Pakistan and the factors leading towards Pakistan i. Aligarh Movement and the contribution of Sir Syed Ahmad Khan. ii. Muslim political organization, Shimla deputation, its Success and the establishment of Muslim League iii. Khalifat Movement and toward Pakistan iv. Lahore/ Pakistan Resolution, Cripps Mission, Cabinet mission Act of Independence 1947	**03 Weeks**
02. Pakistan Initial Problems	2.1 Red Cliffe Award and its implication for Pakistan, Kashmir issue, Hyderabad Junagarh 2.2. Refugee influx i. Administrative Problems. ii. Division of Assets. iii. Division of Army. iv. Water issue. v. Division Punjab and Bangal	**03 Weeks**
03. Islamization of Pakistani polity	3.1 Objective Resolution i. Objective Resolution its concept and incorporation into constitutions of Pakistan 1.2. Islamic Provision constitution of 1956 1962, 1973 i. Islamic Provision of 1956 constitution. ii. Islamic provision of 1962 constitution. iii. Islamic feature of 1973 constitution. iv. Islamization of 1977	**03 Weeks**
04. Federal structure	1.1. Federation under 1973 Constitution i. Structure of Federal Government, President, Prime Minister and the Parliament, Methods of election power and privileges of the parliament	**02 Weeks**

	1.2. Provincial Structure i. Provincial Government, Governor, Chief Minister and Provincial Assembly power and elections 1.3. Local bodies ii. Local bodies' structure and power iii. Judiciary, Supreme Court, High court structure and appointment of judges	
05. Geography and Cultural Heritage	5.1. Lands People of Pakistan i. Geographical location, Importance and strategic position in the region, Physical climate zones of Pakistan. 5.2. Culture heritage and People ii. Indus valley civilization. iii. Gandhara Civilization iv. Harrapa Civilization v. Punjabi Cultural vi. Pushtoon Cultural vii. Balochi Cultural viii. Sindhi Cultural ix. Combined feature of Pakistan cultural, Heritage Social values, Clothes, Food, Arts, Architecture	**03 Weeks**
06. Foreign Policy Relation with other Countries	6.1. Foreign Policy dynamics i. Definition and basic of Foreign policy, Aims and objective of Pakistan F.P, Relation with china, Relation with USA, Relation with Afghanistan, Relation with India, Relation with KSA	**03 Weeks**
07. Population	Population Growth and its impacts on development Education, Agriculture and its Problems, Health, Social Problem, Nation integration, Terrorism, Extremism	**03 Weeks**
	Total Weeks	**20**

Reference Book:

Text book of Pakistan Studies approved by All boards of Khyber Pakhtunkhwa

MATHEMATICS-II

(Part-IV)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Sr. No	Unit No. & Title	Main Topics & Sub Topic	Allotted weeks
01	**1.Introduction to symbolic package: maple**	1.1 Introduction i. Recognize MAPLE environment ii. Recognize basic MAPL commands iii. Use MAPLE as a calculator iv. Use online MAPLE help 1.2 Polynomials i. Use MAPLE commands for ii. Factoring a polynomial iii. Expanding an expression iv. Simplifying an expression v. Substituting into an expression 1.3 Graphics i. Plot a two – dimensional graph ii. Demonstrate domain and range of a plot iii. Sketch parametric equations iv. Know plotting options 1.4 Matrices i. Recognize matrix and vector entry arrangement. ii. Apply matrix operations iii. Compute inverse and transpose of a matrix	**03 Weeks**
02	**2.Functions and Limits**	2.1 Function i. Definition of Function ii. Domain and range of a Function iii. Examples of Function 2.2 Composition of Functions i. Condition for the composition of two functions ii. Find the composition of function 2.3 Transcendental Function to understand i. Algebraic Functions ii. Trigonometric Functions iii. Inverse trigonometric Functions	**03 Weeks**

		iv. Exponential Functions v. Logarithmic Functions vi. Hyperbolic Function 2.4 Graphical Representation i. Draw the graph of exponential logarithmic Functions. ii. Draw graph of circle and parabola iii. Draw the graph of parametric equations and discontinue iv. Use MAPLE package plots for plotting different types of Functions. 2.5 Limit of a Function i. Definition of Limit ii. Examples of Limit iii. Open interval closed interval, closed interval, half open and half closed intervals iv. Limit of a Sequence. v. Theorems on Limits 2.6 Important Limits i. Evaluate the limits of some important functions. ii. Evaluate limits of different algebraic, exponential and trigonometric functions 2.7 Continuous and discontinuous Functions i. Evaluate the left hand and right hand limits. ii. Define continuity at an interval iii. Test Continuity iv. Use MAPLE Command to test continuity of a function	
03	**3.Differentiation**	3.1 Derivative of a Function i. Dependent and independent variables ii. Increment iii. Rate of change iv. Definition of Derivative v. Derivative by first Principle vi. Differentiate y= x^n , n ∈ Z and y =$(ax+b)^n$, n = $\frac{p}{q}$, p,q ∈ z 3.2 Theorems of Differentiation the derivative of constant is zero. i. $\frac{dy}{dx}(kf(x) = k\ \frac{dy}{dx}\ f(x)$, Where f(x) is real- valued function of x. ii. For any two functions f(x) and g(x). iii. $\frac{dy}{dx}(f(x) \pm g(x) = \frac{dy}{dx}f(x) \pm g(x)$ iv. $\frac{dy}{dx}(f(x)X\ g(x) = f(x)X\ \frac{d\ g(x)}{dx} + \frac{df(x)}{dx}\ X\ g(x)$	**02 Weeks**

		v. $\frac{dy}{dx}$ $(\frac{f(x)}{g(x)} = \frac{\frac{d}{dx}f(x)\ X\ g(x) - f(x)X\frac{d}{dx}(g(x)}{[g(x)]\text{^}2})$ 3.3 Applications of theorems on Differentiation Differentiate: i. Constant multiple of x^n ii. Sum (or difference) of function iii. Polynomials. iv. Product of functions. v. Quotient of two functions. 3.4 Chain Rule i. Prove that $\frac{dy}{dx} = \frac{dy}{du}.\frac{du}{dx}$ when ii. y= f(u) and u= g(x) iii. Show that $\frac{dy}{dx}\left(\frac{1}{\frac{dx}{dy}}\right)$ iv. Prove that $\frac{dy}{dx}[f(x)]^n = n[f(x)]^{n-1}f'(x)$ v. Find derivative of implicit function 3.5 Differentiate of Exponential and logarithmic function i. Find the derivative of e^x and a^x from first principle. ii. Find the derivative of lnx and log_a^x from first principle. iii. Use logarithmic differentiation to find derivative of algebraic expression involving product, quotient and power.	
04	**4.Higher order derivative and applications**	4.1 Higher order Derivatives i. Find higher order derivatives of algebraic, exponential and logarithmic functions. ii. Find second derivative of implicit and parametric functions. iii. Use MAPLE command to find higher order derivative of a function. 4.2 Maclaurin's and Taylors Expansion i. Expand $\sin x, \cos x, \tan x, a^x, e^x$ $\log_a(1+x)$ and $\ln(1+x)$ by Maclaurin's and Taylor's theorems. ii. MAPLES command "Taylor" to find Taylor's expansion for a given function. 4.3 Application of Derivatives i. Geometrical interpretation of derivative. ii. Equations of tangent and normal to the iii. Curve at a given point. iv. Angle of intersection of the two curves. 4.4 Maxima and Minima Increasing and decreasing functions. i. Examination of a given function for extreme values. ii. Second derivative rule to find the extreme values of a function at a point. iii. Solve real- life problems related to extreme values.	**02 Weeks**

		iv. MAPLE command to compute maximum and minimum value of a function.	
05	06. **Integration**	6.1 Introduction i. Concept of integral as an accumulator ii. Integration as inverse process of derivative. iii. Constant of integration. iv. Integral formulae 6.2 Rules of integration i. Recognition of rules of integration. ii. Standard differentiation formulae. 6.3 Integration by substitution i. Method of integration by substitution ii. Method of substitution to evaluate the indefinite integrals. iii. Method of substitution to evaluate the integrals. 6.4 Integration by parts i. Recognition of integration by parts ii. Applying method of integration by parts to evaluate the integrals. iii. Evaluate of integrals of integrals using integration by parts. 6.5 Integration by partial fraction Use of partial fraction to find $\int \frac{fx}{gx}\, dx$, where f(x) and g(x) function such that g(x) $\neq 0$ 6.6 Definite Integrals i. Definite integral as the limit of a sum. ii. Fundamental theorem of integral calculus. iii. Properties of definite integrals. iv. Extend techniques of integration using properties to calculate definite integral. v. Definite integral as the area under the curve. vi. Application of definite integral as the area under a curve. MAPLE command "Int" to evaluate definite and indefinite integrals	**03 Weeks**
06	**8. Conics-I**	8.1 Introduction Define conics and demonstrate members of its family i.e circle, parabola, ellipse and hyperbola. 8.2 Circle i. Equation of a Circle • Define circle and derive its equation in standard form i.e. $(x-h)^2 + (y-k)^2 = r^2$	**02 Weeks**

		ii. General Form of an Equation of a circle iii. Recognize general equation of a circle $x^2+y^2+2gx+2fy+c=0$ and find its center and radius. iv. Equation of a circle determined by a given condition v. Find the equation of a circle passing through • three non-collinear points, • two points and having its center on a given line, • two points and equation of tangent at one of these points is known, • Two points and touching a given line. 8.3 Tangent and Normal i. Find the condition when a line intersects the circle. ii. Find the condition when a line touches the circle. iii. Find the equation of a tangent to a circle in slope form. iv. Find the equations of a tangent and a normal to a circle at a point.	
07	**9.Conics-II**	9.1 Parabola i. Define parabola and its elements (i.e. focus, directrix, eccentricity, vertex, axis, focal chord and latus rectum). ii. General Form of Equation of a Parabola. a. Derive the general form of an equation of a parabola iii. Standard Form of Equation of Parabola. a. Derive the standard equations of parabola, sketch their graphs and find their elements. b. Find the equation of a parabola with the following given elements: • Focus and vertex. • Focus and directrix • Vertex and directrix iv. Equation of a Tangent and Normal a. Recognize tangent and normal to a parabola. b. Find the condition when a line is tangent to a parabola at a point and hence write the equation of a tangent line in slope form. c. Find the equation of a tangent and a normal to a parabola at a point.	**03 Weeks**

9.2. Ellipse

i. Define ellipse and its elements (i.e. center, foci, vertices, directories, major and minor axes, eccentricity, focal chord and latera recta).

ii. Explain that circle is a special case of an ellipse.

iii. Standard form of Equation of an Ellipse

a. Derive the standard form of equation of an ellipse and identify its elements.

b. Find the equation of an ellipse with the following given elements

- Major and minor axes,
- Two points,
- Foci, vertices or length of a latera recta,
- Foci, minor axes or length of a latus rectum.

iv. Equations of Tangent and normal

a. Recognize tangent and normal to an ellipse.

b. Find points of intersection of an ellipse with a line including the condition of tangency.

c. Find the equation of a tangent in slope form.

d. Find the equation of a tangent and normal to an ellipse at a point.

9.3 Hyperbola

i. Define hyperbola and its elements (i.e. center, foci, vertices, directories, transverse and conjugate axes, eccentricity, focal chord and latera recta).

ii. Standard Form of Equation of Hyperbola

a. Derive the standard form of equation of hyperbola and identify its elements.

b. Find the equation of a hyperbola with the following given elements.

- Transverse and conjugate axes with center at origin,
- Two points
- eccentricity, latera recta and transverse axes,
- focus, eccentricity and center,
- Focus, center and directrix.

iii. Convert a given equation to the standard form of equation of a hyperbola, find its elements and sketch the graph.

		iv. Equation of Tangent and Normal a. Recognize tangent and normal to a hyperbola. b. Find • Points of intersection of a hyperbola with a line including the condition of tangency, • The equation of a tangent in a slope form. v. Find the equation of a tangent and a normal to a hyperbola at a point.	
08	**12. Introduction to Numerical Methods**	12.1 Numerical solution of Non- Linear Equations i. Importance of numerical method ii. To find the real roots of non- linear equation in one variable by a) Bisection Method b) Regula-Falsi Method c) Newton Raphson Method 12.2 Numerical Quadrature i. Formula of numerical integration ii. Trapezoidal rule iii. Simpson's rule iv. MAPLE command "trapezoid" for trapezoidal rule and "simpson" for simpson's rule and demonstrate through examples	**02 Weeks**
		Total Weeks	**20**

Recommended Book

"A Text book of Mathematics for Grade XII" KP Textbook Board, Peshawar

Economics-II

(Part-IV)

Total Theory Marks:	100
Total Weeks:	20
Contact Hours per week:	06
Total Contact Hours:	120

General Objectives:

The General Objective of the course is to equip the students with solid knowledge, understanding of real-world example, and practical application of Microeconomics issue and to enable them to demonstrate their ability to apply economic theory to a range of economic problems and effectively communicate their analysis. To enables the students of economics to become pro economics & stability in the country.

AIMS:

1. To understand the economic values in life.
2. To acquaint with the economic development with the object to understand the main socio-economic and political events of modern world.
3. To familiarize the students about the revolutionary economic development of modern world and its importance.
4. To analyze the role of economic factors responsible for the rise and fall of nations.
5. To analyze the role of economically strong powers in the world politics.
6. To acquaint the students with the economics development of Pakistan modern world.

Objectives:

1. To enable the students to become responsible and productive citizen.
2. To familiarize the students with the basic philosophy of Islamic Economic System and its role in poverty alleviation and income generation.
3. To highlight factors which further the economic development of Pakistan thereby ensuring better quality of life, greater employment opportunities and increased output.
4. To develop amongst the students a sense of civic responsibilities, spirit of honesty, dignity of labour and earing one's living by fair means.

5. To enable the students to appreciate the difference between various economic system in comparison with the basic economic philosophy of Islam.

6. To inculcate in students, the gratitude to Allah Almighty for his all blessings and to work for national cohesion and solidarity and for creating a society based on equity and equitity.

B: Macro Economics

Chapter	Chapter Name / Concepts	Contents	Book (Teaching confined to the following topics/subtopics)	Weeks
01	Nature and scope of Economics	A. Introduction 1. Wants 2. Goods & Services 3. Utility & Scarcity 4. Economic problem 5. Definitions of (a) Adam Smith (b) Marshall (c) L Robbins	A. Introduction 1. Wants (Kinds-Economic wants) 2. Goods & Services & Kinds 3. Definitions of Utility & Scarcity 4. Nature of Economic problem 5. Brief Comparison of (a) Adam Smith (b) Marshall (c) L Robbins Deleted / Reduced Part B Micro & Macro, Positive & Normative 2. Economic laws	02 weeks
02	Consumer Behavior & its Analysis	Definition/Explanation with the help of table & Diagram: 1. Law of Diminishing Marginal Utility 2. Law of Equi-Marginal Utility 3. Indifference Curves	Definition/Explanation with the help of table & Diagram: 1. Law of Diminishing Marginal Utility 2. Law of Equi-Marginal Utility 3. Indifference Curves	02 Weeks
03	Basic tools of Statistics & Mathematics	(i) Variables- Continuous & discontinuous, Dependent & Independent (ii) Linear equation (iii) Quadratic equation (iv) Simultaneous equations (v) Statistical data & its collection	Explanations with the help of tables & graph of (i) Variables- Continuous & discontinuous, Dependent & Independent (ii) Linear equation (iii) Quadratic equation (iv) Simultaneous equations (v) Statistical data & its collection	02 Weeks
04	Demand	1. Definition of Demand & Desire (wish) 2. Law of Demand 3. Demand function/equation 4. Movement along the curve 5. Shift in demand curve 6. Degree (e=0 to infinite) & Kinds of Elasticity 7. Importance of Elasticity	Explanations with the help of equation, tables & graph of (i) Law of Demand (ii) Demand function/equation (iii) Movement along the curve & its reasons (iv) Shift in demand curve & its reasons (v) Degree & Kinds of Elasticity (Price, Cross-Price and Income) (vi) Importance of Elasticity	03 Weeks
05	Supply	1. Definition of Supply & stock 2. Law of Supply 3. Supply function/equation 4. Movement along the curve 5. Shift in demand curve	Explanations with the help of equation, tables & graph of (i) Law of Supply (ii) Demand function/equation (iii) Movement along the curve	03 Weeks

		6. Kinds & Measurement of Elasticity 7. Importance of Elasticity	(iv) Shift in Supply curve (v) Kinds & Measurement of Elasticity (Price, Cross-Price and Income) (vi) Importance of Elasticity	
06	Equilibrium	(i) Equilibrium of Demand and Supply (ii) Equilibrium Price & output (iii) Changes in Equilibrium Price & Output	Explanations with the help of tables & graph and equation of (i) Equilibrium of DD & SS (ii) Equilibrium Price & Output (iii) Changes in Equilibrium Price & Output due to changes in DD& SS	02 Weeks
07	Theory of Production	(i) Meaning of production (ii) Factors of Production (iii) Characteristics and importance of factors of production	(i) Meaning of production (ii) Factors of Production (with brief of rewards of FOP) (iii) Characteristics and importance of factors of production	01 Week
08	Scales of Production and laws of return	(i) Scale of production (ii) Economies & Dis-economies (internal & External) (iii) Laws of production (iv) Increasing, Constant & Decreasing Return/Production	(i) Scale of production & Determinants (brief) (ii) Internal & External economies of scale (brief) (iii) Economies & Dis-economies (iv) Explanation of Laws of production / returns with the help of schedule and Diagram.	01 Week
09	Cost of Production	Definition and classification of costs o production (i) Fixed Cost (ii) Variable Cost (iii) Total Cost (iv) Variable Cost (v) Average Cost (vi) Marginal Cost	Explanation of Costs classifications (i-iv) with the help of Schedule and Graphs (Short Run)	01 Week
10	Revenue Analysis	Definition of 1. Revenue, 2. Total Revenue, Average Revenue, Marginal Revenue 3. Price and Output determination under perfect competition in short run	Definition of 1. Revenue, Total Revenue, Average Revenue 2. Marginal Revenue 3. Price and Output determination of a firm and industry under perfect competition in short run	02 Weeks
11	Market	(i) Meaning and significance of market (ii) Kinds of market	Meaning and significance of market, Kinds of market - Perfect competition and Monopoly	01 Week
12	Distribution - Factors of Pricing		Partially covered in Chapter 7	
				20

Medium of Instructions: English/Urdu
Minimum Qualification of Instructor: Master in Economics/BS Economics

Recommended Books:

1. Economics from Punjab Curriculum & Text Book Board Lahore (Part-12) (For Urdu Medium)
2. Economics by M. Saeed Nasir (For English Medium)

STATISTICS-II

(Part-IV)

Total Theory Marks: 100

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Chapter No / Module	Main Topics & Sub Topic	Allotted weeks
01. Probability	1.1 Introduction to Probability i. Define the following. • Random Experiment • Sample space, Sample point and random event • Simple and compound event • Mutually and not mutually exclusive events. ii. Explain the term "Probability" through: • Classical approach. • Relative frequency definition • By its axiomatic definition iii. Recognize the formula for probability of occurrence of an event. iv. Apply the formula for finding probability in simple cases. 1.2 Counting Techniques i. Describe the fundamental principle of counting. ii. Explain the meaning of permutation iii. Deduce that: ${}_nP_r = \frac{n!}{(n-r)!}$ iv. Explain the meaning of combination. Deduce that ${}_nC_r = \frac{n!}{(n-r)!r!}$ 1.3 Laws of probability i. Describe the probability of non-occurrence of an event ii. Describe the law of probability of complementation iii. State addition law of probability iv. Apply addition law of probability to solve real life problems. v. Explain dependent and independent events. vi. Define conditional probability vii. State the law of probability under multiplication. viii. Apply multiplication law to solve real life problems.	03 weeks
02. Random Variables and Probability Distributions	2.1 Random Variable i. Define random variable ii. Differentiate between discrete and continuous random variables with real life examples. 2.2 Discrete Random Variables	03 weeks

	i. Describe the probability distribution of a discrete random variable. ii. Find the probability distribution of discrete random variable. iii. Recognize probability mass function. iv. Define the expected value of discrete random variable. v. Find the expected value of a discrete random variable. vi. Describe and verify the properties of expected value of a discrete random variable. 2.3 Continuous Random Variable i. Define: • Probability distribution of a continuous random variable. • Probability density function. ii. Define expected value of a continuous random variable. iii. Find the expected value of a continuous random variable.	
03. Special Discrete Probability Distributions	3.1 Bernoulli Distribution i. Define the following: • The Bernoulli trials. • Bernoulli random variables. • A Bernoulli probability distribution. • A Bernoulli probability mass function. ii. Calculate mean and variance of Bernoulli probability distribution. iii. Solve real life problems using Bernoulli probability distribution. 3.2 Binomial Probability Distribution i. Define the following: • A binomial experiment. • A binomial random variable. • A binomial probability distribution. • A binomial probability mass function ii. Calculate mean and variance of binomial probability distribution. iii. Solve real life problems using binomial probability distribution.	02 weeks
04.Special Continuous Probability Distribution.	4.1 Continuous Uniform Distribution i. Define the following • A continuous uniform probability distribution. • A continuous uniform probability density function. ii. Find the mean, variance and standard deviation of continuous uniform probability distribution. iii. Solve real life problems using continuous uniform probability distribution. 4.2 Normal distribution i. Define the following: • A normal probability distribution. • A normal probability density function • A standard normal distribution. ii. Describe the properties of normal probability distribution. iii. Find the probabilities for a standard normal random variable. iv. Solve real life problems using normal probability distribution.	03 weeks

05. Sampling and Sampling Distributions	5.1 Survey Sampling i. Define: • Sampling, sampling units • Sampling Frame • Sampling Design ii. Differentiate between: • Finite and infinite populations. • Sample survey and complete enumeration iii. Describe advantages and disadvantages of sampling. iv. Differentiate between: • Probability and non-probability sampling • Random sampling with and without replacement. v. Differentiate between sampling and non-sampling errors. vi. Describe the sampling techniques: • Simple random sampling. • Stratified random sampling. • Systematic random sampling. 5.2 Sampling Distribution of sample mean. i. Define: • Sampling distribution of sample mean • Standard error of sample mean. ii. Construct the sampling distribution of sample mean. 5.3 Sampling distribution of sample proportion i. Define sampling distribution of sample proportion. ii. Describe the properties of sampling distribution of sample proportion. iii. Construct the sampling distribution of sample proportion.	03 weeks
06. Estimation	6.1 Introduction i. Define: • Estimation of parameter. • Point estimation of a parameter. • Point estimator • Point estimate. ii. Differentiate between point estimator and point estimate. 6.2 Point Estimation i. Define: • Unbiasedness • Unbiased estimator • Biased estimator • Bias ii. Describe and verify the unbiasedness of : • Population mean • Population proportion iii. Define efficiency iv. Explain best estimator 6.3 Interval Estimation i. Define: • Interval estimation of a parameter: • Conference coefficient • Interval estimate.	02 weeks

	ii. Explain and estimate the confidence interval for: • The mean of a normal population. • The population proportion.	
07. Hypothesis Testing	7.1 Introduction i. Describe statistical hypothesis and hypothesis testing. ii. Differentiate between: • Null and alternative hypothesis • Simple and composite hypothesis iii. Formulate null and alternative hypothesis iv. Describe the element involved in hypothesis testing: • Test statistics • Rejection and non- rejection regions. • Critical value(s) • One tailed and two tailed tests • Type-I and type-II errors. • Significance level • Conclusion 7.2 Hypothesis Testing i. Apply the test of hypothesis about: • The mean of a normal population (Known/unknown std-deviation). • The population proportion (large sample)	02 weeks
08. Association of attributes	8.1 Attribute i. Recall variable and attribute. ii. Describe class and class frequency iii. Recognize categorical data of two attributes iv. Explain independence of two attributes. v. Discuss the association of two attributes. • Positive association • Negative association • Complete association • Complete disassociation. vi. Define coefficient of association. 8.2 Contingency table i. Define a contingency table. ii. Know the criterion of independence of two attributes in a contingency table iii. Test whether two attributes, in a given contingency table, are statistically independent or not.	02 weeks

Reference Book:

Textbook for Grade XII, KP textbook board Peshawar.

Mutalae Quran-e-Hakeem

(Part-IV)

Total Theory Marks: 50

Total Weeks: 20

Contact Hours per week: 03

Total Contact Hours: 60

نمبر شمار	سورۃ		عنوانات	ہفتے اور ہفتہ وار کلاسیں
ا	سورۃ النساء	i	رکوع نمبر 01 تا 04 متن ترجمہ آیات 01 تا 25	04 ہفتے 12 کلاسیں
		ii	رکوع نمبر 07 تا 09 متن ترجمہ آیات 43 تا 70	
		iii	رکوع نمبر 22 تا 24 متن ترجمہ آیات 153 تا 176	
2	سورۃ المائدۃ	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 11	03 ہفتے 09 کلاسیں
		ii	رکوع نمبر 06 تا 07 متن ترجمہ آیات 35 تا 50	
		iii	رکوع نمبر 12 تا 13 متن ترجمہ آیات 87 تا 100	
3	سورۃ النور	i	رکوع نمبر 01 تا 04 متن ترجمہ آیات 01 تا 34	02 ہفتے 06 کلاسیں
4	سورۃ الاحزاب	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 18	03 ہفتے 09 کلاسیں
		ii	رکوع نمبر 06 تا 09 متن ترجمہ آیات 41 تا 72	
5	سورۃ محمد	i	رکوع نمبر 01 تا 02 متن ترجمہ آیات 01 تا 19	3 ہفتے 09 کلاسیں
6	سورۃ الفتح	i	رکوع نمبر 03 تا 04 متن ترجمہ آیات 18 تا 29	
7	سورۃ الحجرات	i	رکوع نمبر 01 تا 02، متن ترجمہ آیات 01 تا 18	
8	سورۃ الحدید	i	رکوع نمبر 01، متن ترجمہ آیات 01 تا 10	
9	سورۃ المجادلۃ	i	رکوع نمبر 01 ، متن ترجمہ آیات 01 تا 06	

10	سورۃالحشر	i	رکوع نمبر 03، متن ترجمہ آیات18 تا 24	3ہفتے 09 کلاسیں
11	سورۃالممتحنہ	i	رکوع نمبر 02، متن ترجمہ آیات07 تا 13	
12	سورۃالصف	i	رکوع نمبر 02، متن ترجمہ آیات10تا 14	
13	سورۃالطلاق	i	رکوع نمبر 01تا02، متن ترجمہ آیات01 تا 13	
14	سورۃالتحریم	i	رکوع نمبر 02متن ترجمہ آیات08 تا 12	
15			مشقی سوالات	01ہفتہ 03 کلاسیں
16			امتحانات کی تیاری ودہرائی	ایک ہفتہ 03 کلاسیں

نام کتاب:۔ مطالعہ قرآن حکیم خیبر پختو نخواہ ٹیکسٹ بُک بورڈ ، پشاور

PHYSICS-II
(Part-IV)

Total Marks: 100 (Theory 85 Marks Practical 15 Marks)

Total Weeks: 20

Contact Hours per week: 06

Total Contact Hours: 120

Course Outlines

Chapter No / Module	Main Topics & Sub Topic	Allotted weeks
1	Electrostatics	2 Weeks
2	Current Electricity	2 Weeks
3	Electromagnetism	2 Weeks
4	Electromagnetic Induction	2 Weeks
5	Alternating Current	2 Weeks
6	Physics of Solids	2 Weeks
7	Electronics	2 Weeks
8	Dawn of the Modern Physics	2 Weeks
9	Atomic Spectra	2 Weeks
10	Nuclear Physics	2 Weeks