Jorhat Kendriya Mahavidyalaya

Kenduguri, Jorhat-785010 (Assam)

Affiliated by Dibrugarh University

Supporting Documents for AQAR

Criterion 4	Key Indicator: 4.3
Infrastructure and Learning Resource	**IT Infrastructure**
Metric Number: 4.3.1	**Institution frequently updates its IT facilities including Wi-Fi**

Prepared and submitted by
Jorhat Kendriya Mahavidyalaya
2022 – 2023

Jorhat Kendriya Mahavidyalaya Estd - 1981 Date Jorhat-10

Pranjal Dutta
Coordinator, IQAC

Dr. Dulen Saikia
Principal

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PGDCA SYLLABUS

POST GRADUATE DIPLOMA OF COMPUTER APPLICATION (P.G.D.C.A.) COURSE

FIRST SEMESTER

Course No.	*Subject*	*Marks*	
		Theory	*Practical*
Course 101	Fundamental of Computers	60	40
Course 102	Programming with C	60	40
Course 103	Relational Database Management System	40	60
Course 104	Data Communication and Computer Network	40	60
Course 105	Project I	100	

SECOND SEMESTER

Course No.	*Subject*	*Marks*	
		Theory	*Practical*
Course 201	Introduction to Multimedia	60	40
Course 202	Desktop Publishing	40	60
Course 203	Internet & Web Technology	60	40
Course 204	Mobile Technology	60	40
Course 205	Project II	100	

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Course No:	Course Name:	Marks		
101	Fundamental of Computers	Theory: 60	Practical: 40	Total: 100

Objective:

The course is designed with an objective to
- Discuss about computers and their applications,
- Explain the concept of various number systems,
- Explain fundamental concepts of computer hardware and software,
- Discuss the various operating system environments.
- Introduce the various features of Microsoft Office.

Learning Outcome:

On completion of the course, students will be able to
- Identify computer hardware and peripheral devices,
- Differentiate various number systems,
- Distinguish the advantages and disadvantages of various operating systems.
- Use Microsoft Office suite.

PART - A : Theory (TH:101)

Unit I: Introduction **Marks: 12**
Basics of computer, Characteristics of computers, Classification of computers. Input, output and storage devices.

Unit II: Number System **Marks: 12**
Binary, Decimal, Hexadecimal, and Octal systems, Conversion from one system to the other, representation of characters, integers and fractions, Binary arithmetic, BCD, EBCDIC, ASCII, Unicode, XS-3, Grey Codes.

Unit III: Computer languages & Software **Marks: 12**
Introduction to machine language, assembly language, high level language, 4GL, Compiler, Interpreter, Assembler, System Software, Application Software.

Unit IV: Operating Systems **Marks: 12**
Introduction to Operating Systems (Disk Operating System, Windows, Unix, Linux), System Administration, Shell Programming

Unit V: Office Automation Tools **Marks: 12**
Introduction to MS Office suite, its features and uses- Word processing, Spreadsheet and Presentation.

PART - B : Practical (PR:101)
- Basics of DOS and Unix commands
- Basic Windows and Linux operations
- MS Office package (Word processing, Spreadsheet and Presentation)
- System Administration
- Shell Programming

Text Books:

1. Sinha P.K., "*Computer Fundamentals*", 6th Edition, BPB Publication, 2012.
2. Rajaraman,V.,"*Computer Fundamentals*", 6th Edition, PHI,2012.
3. Thareja R., "*Fundamentals of Computers*", Oxford University Press, 2014.
4. Stallings W., "*Operating systems*", 8th Edition, Pearson, 2014.

Reference Books:

1. Ram.B., "*Computer Fundamentals:Architecture and Organization*", 5th Edition, New Age Publication, 2013.
2. Goel.A, "*Computer Fundamentals*", Reprint, Pearson Education, 2011.
3. Srivastva C., "*Fundamentals of Information Technology*", 3rd Edition, Kalyani Publishers, 2008.

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Course No: 102	Course Name: Programming with C	Marks		
		Theory: 60	Practical: 40	Total: 100

Objective:

The course is designed with an objective to
- Explain the fundamental concepts of C programming language.
- Demonstrate C coding.
- Explain the skills for problem solving using C Program.

Prerequisite:

Basic reasoning ability.

Learning Outcome:

On completion of the course, students will be able to
- Comprehend fundamental concepts of C program.
- Develop C code for different problems.

PART - A : Theory (TH:102)

Unit I: C fundamentals **Marks: 12**
C fundamentals, variables, data types, operator & expression, I/O functions and statements, basic structure of a C program, simple programming examples.

Unit II: Control Statements and Loop Control Structures. **Marks: 12**
if-else, nested if-else, switch, for loop, while loop, do-while loop, goto statement, break statement, continue statement, exit() function, programming examples.

Unit III: Arrays and String Manipulation **Marks: 12**
Defining an array, array initialization, processing an array, multidimensional array, strlen() function, strcat() function, strcmp() function, strcpy() function, programming examples.

Unit IV: Functions and Pointer **Marks: 12**
Overview of a function, defining a function, accessing a function, call by value, recursion, Storage classes, pointer declarations, expressions using pointers, pointers as function argument, call by reference, programming examples.

Unit V: Structures and File Management **Marks: 12**
Structures, Declaration and Initializing Structure, Accessing Structure members, Defining and opening a file, closing a file, input/output operations on files, programming examples.

PART - B : Practical (PR:102)

- Fundamental C Programs.
- Programs using control statements and loop control structures.
- Programs implementing concepts of array and string functions.
- Programs implementing storage classes.
- Programs implementing concepts of functions & pointers.
- Programs using structures and files.

Text Books:

1. Kanetkar Y., "*Let Us C*", BPB Publications; 14th edition, 2016
2. Balagurusamy, E. '*Programming in ANSI C*', McGraw Hill Education (India), 6th Edition, 2012
   Griffiths, D., '*Head First C*", Shroff/O'Reilly,' First edition, 2012.

Reference Books:

1. Kernighan, Brian W., Ritchie, Dennis M., '*The C Programming Language*",' PHI, 2nd edition.
2. Herbert, S., "*C: the Complete Reference*", McGraw Hill Education; 4th edition.

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Course No:	Course Name:	Marks		
103	Relational Database Management System	Theory: 40	Practical: 60	Total: 100

Objective:

The course is designed with an objective to
- Discuss the concept of database
- Explain data modeling and database design.
- Discuss the use of SQL

Prerequisite:

Basics of data, information, fact.

Learning Outcome:

On completion of the course, students will be able to
- Define database.
- Explain the advantages of database.
- Construct database model.
- Use RDBMS's back end and front end tools.

PART - A : Theory (TH:103)

Unit I: Database Concept **Marks :10**
Data-Base concept: data, meta data, data item, files, Database, DBMS, Concept of Schema, View

Unit II: Relational DBMS **Marks :10**
RDBMS terminologies, Advantages of RDBMS, Concept of Keys (Primary, Foreign, Composite)

Unit III: Data Modeling **Marks :10**
Data Modeling concept, ER modeling, Functional dependency, Database Normalization, Advantages, Different Normalization forms, (Up-to 3NF)

Unit IV: SQL **Marks :10**
Introduction to Structured Query Language, data types,
DDL, DML and DCL Commands.
Joins, Index, Views

PART - B : Practical (PR:103)

- Introduction to MySQL and any other SQL Tool.
- Database connectivity through Visual Basic

Text Books:

4. Elmasri R, Navathe S.B., "*Fundamentals of Database Systems*", Benjamin Cummings Publishing Company, 7th edition, 2015.
5. Silbersehats, Kroth and Sudershan, "*Principles of Database Systems*", McGraw Hill Publication, 2011.
6. Holzner S., "*Visual Basic 6 Programming*" Dreamtech, 1st Edition, 2000.

Reference Books:

1. Ramakrishnan R., Gehrke J., "*Database Management System*", second edition, McGraw-Hill (IE), 3rd edition, 2014
2. C.S.R. Prabhu, "*Object Oriented Database System: Approaches and Architecture*"; Prentice Hall, 3rd edition, 2010.

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Course No:	Course Name:	Marks		
104	Data Communication and Computer Network	Theory: 40	Practical: 60	Total: 100

Objective:
The course is designed with an objective to
Introduce basics of Data Communications and Computer Networks.

Learning Outcome:
On completion of the course, students will be able to
- Describe fundamental concepts of data communication and computer networks.
- Illustrate the Layers of ISO/OSI and TCP/IP reference model.

PART - A : Theory (TH:104)

Unit I: **Marks :8**
Introduction to computer networks, analog and digital transmission.

Unit II: **Marks :8**
Types of transmission: parallel and serial communication, Asynchronous and synchronous communication, modes of communication: simplex, half duplex & full duplex. Multiplexing concept

Unit III: **Marks :8**
Types of networks, Network topologies, Transmission media: guided and unguided media, Introduction to wireless networks.

Unit IV: **Marks: 8**
Network reference models, ISO/OSI and TCP/IP

Unit V: **Marks: 8**
Internetworking devices, Error control & detection mechanisms.

PART - B : Practical (PR:104)

- Familiar with networking devices and transmission media.
- Basic network commands.
- Hands on practice on basic network design.
- Network setup, Monitoring and Administration

Text Books:
1. Godbole,S.A," *Data Communication and Networking* ", Tata McGraw Hill , 2nd Edition, 2011
2. Bhusan T, " *Data Communication and Networks*", Oxford University Press 1st Edition, 2016

Reference Books:
1. William S, "*Data and computer communications*", Pearson education Asia, 7th Edition, 2011.
2. Forouzan, B. A. "*Data Communication and Networking* "Tata McGraw Hill, 6th edition, 2014.

Discussion
- Application : FTP, Telnet , Internet

Course No:	Course Name:	Project Work	Seminar	Viva	Total
105	Project I	60	20	20	100

Objective:
The course is designed with an objective to
- Explain basics of system analysis and design.
- Implement the concepts of 1st semester courses.

Learning Outcome:
On completion of the course, students will be able to
- Comprehend fundamental concepts of system analysis and design
- Use and apply the concepts of courses of the 1st semester PGDCA programme.

Course Work on System Analysis and Design:
Basics of System, System element, System Planning and Analysis, SDLC, DFD, DSS, Data and fact gathering techniques, Feasibility study

Project Guidelines:

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Course No:	Course Name:	Marks		
201	Introduction to Multimedia	Theory: 60	Practical: 40	Total: 100

Objective:
The course is designed with an objective to
- Introduce the fundamental elements of multimedia.
- Describe how still images, sound, and video can be digitized on the computer.

Learning Outcome:
On completion of the course, students will be able to
- Summarize the key concepts in current multimedia technology.
- Create quality multimedia software titles.

PART - A : Theory (TH:201)

Unit I: Introduction to Multimedia **Marks:10**
Basics of multimedia and its Components, Fonts and hypertext.

Unit II: Audio fundamentals and representations **Marks:15**
Digitization of sound, frequency and bandwidth, decimal system, data rate, audio file format, sound synthesis, MIDI, wavetable, compression and transmission of audio on internet, adding sound to multimedia project.

Unit III: Image Fundamentals and representations **Marks:10**
Colour science, colour, colour models, colour palettes, Dithering, 2D Graphics, Image compression and File Formats.

Unit IV: Video and Animation **Marks:15**
Video Basics, Broadcast Video Standards, Analog video, Digital video, Video Recording and Tape formats, Shooting and Editing Video, Video Compression and File Formats. Video compression .

Unit V: Animation **Marks:10**
Cell Animation, Computer Animation, Morphing

PART - B : Practical (PR:201)

- Assignments may be handled using Multimedia tools, such as Flash, Dreamweaver, Photoshop etc. or any other open source multimedia tools.

Text Books:

1. Jain S.,Singh S.,Iyer M. G., "Introduction to Multimedia" BPB, Reprint 2015.
2. Parekh Ranjan, "*Principles of Multimedia*", 2nd Edition, Tata McGraw-Hill, 2012.
3. Nahrstedt K., Steinmetz R., "*Multimedia*", 2nd Edition, Pearson, 2014.

Reference Books:

1. Tay Vaughan, "*Multimedia: Making it Work*", Eighth Edition, Tata McGraw-Hill, 2011.
2. Rao K., Bojkovic Z., Milovanovic D. "*Introduction to Multimedia Communications*", Willey Student Edition, Wiley India Pvt. Ltd, 2009.

Discussion:

- The emphasis will be on learning the representations, perceptions and applications of multimedia.
- Software skills and hands on work on digital media will also be emphasized.

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Course No:	Course Name:	Marks		
201	Introduction to Multimedia	Theory: 60	Practical: 40	Total: 100

Objective:
The course is designed with an objective to
- Introduce the fundamental elements of multimedia.
- Describe how still images, sound, and video can be digitized on the computer.

Learning Outcome:
On completion of the course, students will be able to
- Summarize the key concepts in current multimedia technology.
- Create quality multimedia software titles.

PART - A : Theory (TH:201)

Unit I: Introduction to Multimedia **Marks:10**
Basics of multimedia and its Components, Fonts and hypertext.

Unit II: Audio fundamentals and representations **Marks:15**
Digitization of sound, frequency and bandwidth, decimal system, data rate, audio file format, sound synthesis, MIDI, wavetable, compression and transmission of audio on internet, adding sound to multimedia project.

Unit III: Image Fundamentals and representations **Marks:10**
Colour science, colour, colour models, colour palettes, Dithering, 2D Graphics, Image compression and File Formats.

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Video Basics, Broadcast Video Standards, Analog video, Digital video, Video Recording and Tape formats, Shooting and Editing Video, Video Compression and File Formats. Video compression .

Unit V: Animation **Marks:10**
Cell Animation, Computer Animation, Morphing

PART - B : Practical (PR:201)

- Assignments may be handled using Multimedia tools, such as Flash, Dreamweaver, Photoshop etc. or any other open source multimedia tools.

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1. Jain S.,Singh S.,Iyer M. G., "Introduction to Multimedia" BPB, Reprint 2015.
2. Parekh Ranjan, "*Principles of Multimedia*", 2nd Edition, Tata McGraw-Hill, 2012.
3. Nahrstedt K., Steinmetz R., "*Multimedia*", 2nd Edition, Pearson, 2014.

Reference Books:

1. Tay Vaughan, "*Multimedia: Making it Work*", Eighth Edition, Tata McGraw-Hill, 2011.
2. Rao K., Bojkovic Z., Milovanovic D. "*Introduction to Multimedia Communications*", Willey Student Edition, Wiley India Pvt. Ltd, 2009.

Discussion:

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Course No:	Course Name:	Marks		
202	Desktop Publishing	Theory: 40	Practical: 60	Total: 100

Objective:
The course is designed with an objective to
- Introduce PageMaker, CorelDraw and Photoshop
- Explain the basics of different kinds of printings

Learning Outcome:
On completion of the course, students will be able to
- Create book works, building booklets, completing the book using PageMaker
- Create business cards, pamphlets, banners, newspapers, books using CorelDraw
- Use various tools of Photoshop

PART - A : Theory (TH:202)

Unit I: PageMaker **Marks: 10**
Page layout Basics, entering text, encoding schemes, defining styles, saving files, creating frame, inserting &removing pages, adding shapes, creating header &footer, using color, printing.

Unit II: CorelDraw **Marks: 10**
Drawing Shapes & Graphics, Use of basic tools, Logos & Artistic Text, Multicolor Designs, adding special effects, inserting symbols.

Unit III: Photoshop **Marks: 10**
Image/Photo Editing-Mixing-Enhancements, Creating Digital Images & Backgrounds, Creating Web Graphics.

Unit IV: Printing **Marks: 10**
Types of Printing an Introduction-Letterpress printing-lithography-offset printing- different printing process-machines for letterpress, offset, gravure, flexography and screen printing-printing materials.

PART - B : Practical (PR:202)

- Hands on Practice on PageMaker, CorelDraw, Adobe Photoshop, Printing

Text Books:

1. Taxali R.K., "*Simplex Computer Course*", Tata McGraw Hill, 2011.
2. Campbell M., "*Pagemaker 7.0 From A to Z*", Independent Publishers Group, 2001.
3. Ocampo P., "*Adobe Photoshop CC 2014 for Visual Learners*", 1st Edition, Paolo Ocampo, 2014.

Reference Books:

1. Kroenke D., Nilson D., "*Microsoft Office 365 in Business*", US Edition, Wiley India Pvt. Ltd, 2011.
2. Jain S. "*MS Office 2010 Training Guide*", BPB Publications, 2010.

Discussion:

- Basic Concept.
- Practical oriented.
- Encoding schemes: ASCII, UNICODE, FONTS
- Watermarking

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Course No:	Course Name:	Marks		
203	Internet & Web Technology	Theory: 60	Practical: 40	Total: 100

Objective:
The course is designed with an objective to
- Discuss different technology aspects of internet.
- Explain about importance of E-commerce, internet security,
- Explain how an internet works.
- Write program in HTML, java Scripts to design web pages

Prerequisite:
Course 104

Learning Outcome:
On completion of the course, students will be able to
- Develop and publish web sites.
- Resolve Code and troubleshoot HTML web pages, incorporating CSS and JavaScripts.

PART - A : Theory (TH:203)

Unit I: Introduction to Internet **Marks: 15**
Basics of internet, Internet protocols, Internet vs Intranet, ISP, URLs, Email, File Transfer Protocol, Internet chatting, Web Servers ,Web Browsers and their functions, Search Engines, Internet issues, security. Introduction to E-Commerce, Meaning, Objective, challenges and opportunities.

Unit II: Introduction to HTML **Marks: 20**
Basics of HTML, HTML Tag, HTML Documents, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Color controls, Different HTML tags, Table layout , Use of font size & Attributes, List types and its tags, forms in web pages, CSS definition and application Web publishing

Unit III: Basics of JavaScript **Marks: 15**
JavaScript Overview, syntax & conventions, Variables, Expressions, Looping statements, Functions, Arrays Objects, Events - onClick, on Mouse Over, on Submit, on Focus, on Change, on Blur. On Load, onUnload, Alerts, Prompts & Confirms.

Unit IV: Basic of PHP **Marks: 10**
Introduction to PHP file, Operators and expressions; Conditional statements and iterations in PHP; Connecting to the Database selecting the Database Table, Executing commands and closing the connection to the Database.

PART - B : Practical (PR:203)

- Designing of Web page using HTML, JavaScripts and PHP
- Web application development

Text Books:

1. Jain V.K. ,"*O Level Module - M 1.2 - Internet& Webpage Designing*"– BPB Publications,2015
2. Whiteley D, "*E - Commerce: Strategy, Technologies and Applications*", Tata McGraw hill, 1st edition.

Reference Books:

1. Joseph P.T., "E-Commerce An Indian Perspective (Second Edition)", S.J. Presentice-Hall of India
2. Leon A. and Leon M.,"Internet for Everyone", Vikas Publishing House Pvt. Ltd,New Delhi.

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Course No:	Course Name:	Marks		
204	Mobile Technology	Theory: 60	Practical: 40	Total: 100

Objective:
The course is designed with an objective to
- Discuss different mobile operating system.
- Discuss different methods for mobile application development.

Prerequisite:
Basic Idea of mobile OS, html.

Learning Outcome:
On completion of the course, students will be able to
- Explain different mobile operating system.
- Discuss various mobile technologies.
- Develop mobile applications.

PART - A : Theory (TH:204)

Unit I: Mobile Terminology **Marks :10**
Mobile terminology: GSM, CDMA, WAP, GPRS, WCDMA, 3g, 4g, LTE, sensors.

Unit II: Mobile Operating Systems **Marks :10**
Operating systems concepts, Mobile operating system, Google Android, Apple IOS.

Unit III: Technologies for Mobile Application Development **Marks :20**
Java, XML, HTML5, J-query, C#.

Unit IV: Application Development Platforms **Marks :20**
Android studio, Eclipse, App-Builder.

PART - B : Practical (PR:204)

- Android application development
- Hybrid Application Development

Text Books:

1. Horton. J, "*Android Programming for Beginners*", Packt Publishing Ltd, Paperback Edition, 2015
2. Shildit. H , "*Java: A beginers Guide*", McGraw Hill Education, Sixth edition 2014
3. Talukder A., Yavagal A., "*Mobile Computing*" , Tata McGraw Hill, 2nd edition 2012

Reference Books:

3. Horton. J, "*Learning Java by Building Android Games*", Packt Publishing Ltd, Paperback Edition, 2015
4. Schiller J., "*Mobile Communication*" Pearson education, 2nd edition 2014

Discussion:

Brief mentioning of the following:
- BlackBerry OS, Symbian, BADA, Firefox OS, Microsoft's Windows Phone OS, PALM OS, Tizen OS.

Course No:	Course Name:	Project Work	Seminar	Viva	Total
205	Project II	60	20	20	100

Objective:
The course is designed with an objective to
- Implement the concepts in real life applications

Learning Outcome:
On completion of the course, students will be able to
- Use and apply the concepts of courses of the PGDCA programme.

Project Guidelines:

Students will have to implement a minor project based on the subjects covered in the programme. They have to submit a project report and appear for seminar and viva.

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