



Eklavya University

SESSION

2023-24

M.Sc.(CS) IV SEMESTER

SYLLABUS

OF

**Computer Application And Information
Technology Department**

School of Basic and Applied Sciences

EKLAHYA UNIVERSITY, DAMOH (M.P.)

Scheme of Examination Computer Science MSc.(cs) IV Sem

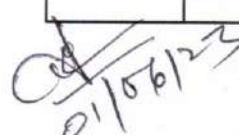
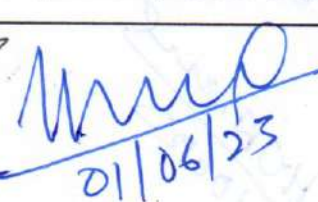
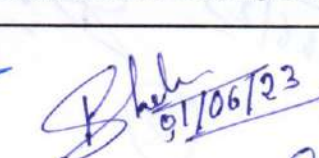

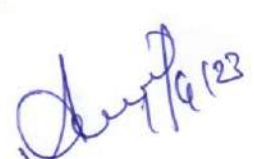

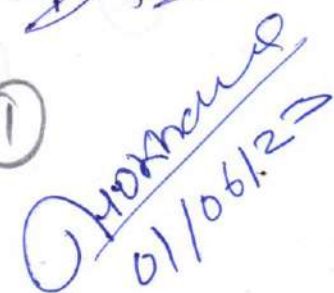

For batch admitted in Academic Session 2023-24

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods Per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem.	Mid term Examination	Quiz/ Assignment/ Attendance	End Sem	Lab Work/ sessional					
1	MCOSC20S401	Python Programming	60	30	10	-	-	100	4	1	-	5
2	MCOSC20S402	Dot Net Technology	60	30	10	-	-	100	4	1	-	5
3	MCOSC20S403	Project Work	-	-	-	120	80	200	-	-	10	10
Open Elective												
4	MCOSC20S404	Mobile Application Development	60	30	10	-	-	100	4	1	-	5
5	MCOSC20S405	Information Security	60	30	10	-	-	100	4	1	-	5
6	MCOSC20S406	Big Data Analytics	60	30	10	-	-	100	4	1	-	5
7	MCOSC20S407	Computer Lab 4	-	-	-	60	40	100	-	-	5	5
Total			300	160	40	60	40	600	12	3	15	30

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		SEMESTER - IV	
Subject & Subject Code		Python Programming - MCOSC20S401	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	5
4	1	0	
Course Objectives:			
<ol style="list-style-type: none"> 1. To Introduce Python Programming Language as Multipurpose Programming Language with Features and Applications. 2. To Learn Installing Python and Introducing Cross Multiplatform Usage of Python. 3. To Practice Basic Language Features of Python. 3. To Implement Oops Concepts Using Python. 4. To Work with Files in Python 			
Course Outcome:			
<ol style="list-style-type: none"> 1. Install and use Python on Various Platform. 2. Understand and Explain the features of Python language 3. Design and Develop Python Applications for Data Analysis using Object-Oriented concept. 4. Build Package and Modules in Python with Reusability and Exception Aspect 5. Write Programs for Reading and Writing Files in Python. . 			
Student Learning Outcomes (SLO):			
Students will:			
<ol style="list-style-type: none"> 1. To understand why Python is a useful scripting language for developers. 2. To learn how to design and program Python applications. 3. To learn how to use lists, tuples, and dictionaries in Python programs. 4. To learn how to identify Python object types. 			
Unit	Syllabus		Periods
UNIT - I	Environment Setup of Python: Application Area Interactive Mode and Script Mode Data Types Mutable and Immutable, Variables Expressions and Statements Variables and Keywords, Operators and Operands in Python, Expressions and Statements; Taking Input (Using Raw_Input() and Input() and Displaying Output. Functions: Importing Modules, Invoking Built in Functions, Functions from Math Module Functions from Random Module. Function from Date Time, Module Functions from Remodule Composition, Defining Functions, Invoking Functions, Scope Passing Parameters, Scope of Variables, Void Functions and Functions Returning Values, Recursion Conditional and Looping Construct use of Compound Expression in Conditional and Looping Construc.		8

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UNIT - II	Strings: String Operators, Comparing Strings Using Relational Operators; String Functions & Methods. Regular Expressions and Pattern Matching Lists: Concept of Mutable Lists, Creating Initializing and Accessing the Elements Traversing, Appending, Updating and Deleting Elements, Composition Lists as Arguments, List Operations List Functions and Methods Dictionaries: Concept of Key-Value, Pair, Creating, Initializing and Accessing the Elements in a Dictionary Traversing Appending, Updating and Deleting Elements. Dictionary Functions and Methods Tuples: Immutable Concept, Creating Initializing and Accessing Elements in a Tuple, Tuple Assignment, Tuple Slices, Tuple Indexing Tuple Functions.	8
UNIT - III	Concept of Object Oriented Programming: Data Hiding, Data Encapsulation, Class and Object, Polymorphism, Inheritance, Advantages of Object Oriented Programming over Earlier Programming, Methodologies Classes: Defining Classes (Attributes Methods) Creating Instance Objects, Accessing Attributes and Methods Using Built in Class Attributes (Diet Doc Name Module Bases) Constructor (Init() Del() and Str()) Methods in a Class, Private Attributes (Limited Support) Importance of "Self" (Acts as a Pointer to Current Calling Object) Operator Overloading with Methods	8
UNIT - IV	Inheritance: Concept of Base Class and Derived Class: Single Multilevel and multiple, Inheritance Overriding Methods Using Super() in Derived Class to Invoke Init() or Overridden Methods of Parent Class. Data File: Need for Non-Bold for Data File Types of Data File-Text and Binary Opening and Closing Files- Open(), Close(), Access Modes (Output Input Default) File Object Access Modes, Reading and Writing a File Read(), Readline(), Readlines(), Write() Writeliness File Positions (Seek() Tell()) Renaming and Deleting a File Flush()	8
UNIT - V	Implementation of Basic File Operations on Text and Binary File in Python: Creating/Writing Data into File Reading and Displaying Data from File Searching for Particular Data from a File Insertion and Deletion of Data from an Already Existing, File Modification of Data in File Error and Exceptions: Name error Indexerror, Typeerror, I/O Error, Importerror, Valueerror, Eoferror Generator Function Using Yield	8

References Books:

- 1 Mark Lutz o'-Learning Python 5th Edition reilly Publication
- 2 Fabrizio Romano-Learning Python Download Link – <https://www.packtpub.com/packt/free-ebook/learning-python>
- 3 Mark Lutz-Learning Python (Fourth Edition) –Download Link [http://freebook:qiniudn.com/learning%20python%204th%20edition.pdf](http://freebook.qiniudn.com/learning%20python%204th%20edition.pdf)

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Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		SEMESTER - IV	
Subject & Subject Code		Dot Net Technology - MCOSC20S402	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	5
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Course Objectives:

1. Identify the Basics of .Net Framework Architecture and User Programs
2. Do GUI Programming Using Vb.Net and C#
3. Examine the Challenges Involved in .Net Framework Programming
4. Do Event Driven Programming Projects
5. Learn the ADO .Net Database Usages in Website Creation
6. Empower the Websites with use of Xml.

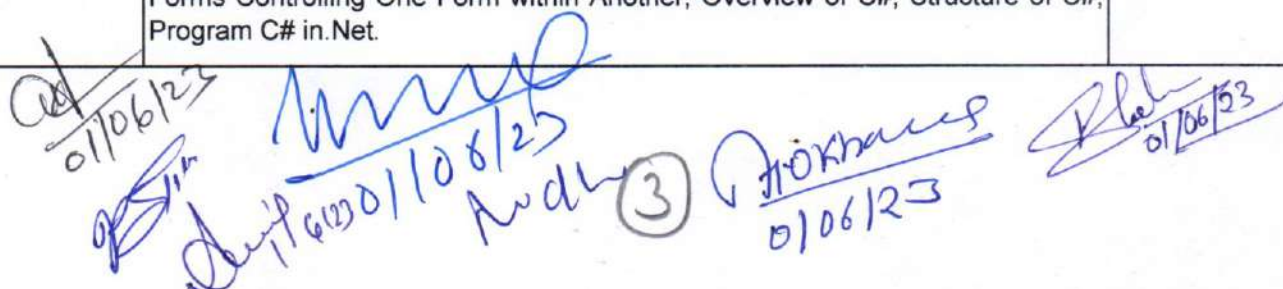
Course Outcome:

1. Understand and explore various Features of .Net Framework
2. Analyze Design and Develop the GUI of Applications software Using VB.Net and C#
3. Design Develop and Implement Complete software Projects Using VB.Net and C# with consideration of Environment in team spirit.
4. Analyze the requirement design and develop Dynamic and Static Websites and web applications using .Net technology.
5. Integrate and Apply Different Components Including Database Xml with Proper Choice of Languages Mapping

Student Learning Outcomes (SLO):

1. Design a simple database.
2. Build a new database with related tables.
3. Manage the data in a table.
4. Query a database using different methods.
5. Understand the Microsoft .NET Framework page structure
6. Design web application with variety of controls
7. Access the data using inbuilt data access tools
8. Use Microsoft ADO.NET to access data in web Application.

Unit	Syllabus	Periods
UNIT - I	Introduction to .Net: Net Framework, Features & Architecture CL, Common Type System, MSIL Assemblies: Types of Assemblies, Class Libraries. Event Drive Programming, Methods and Events Related with Mouse and Keyboard. Programming in Visual Studio, Types of Project in .Net IDE of Vb.Net- Menu Bar, Toolbar Project Explorer, Toolbox, Properties Window Form Designer, Form Layout Immediate Window Asp & Html Forms	8
UNIT - II	the Vb.Net Language- Variables Declaring, Variables Data Types, Scope & Lifetime of a Variable, Arrays, Types of Array, Control Array, Subroutine Functions Passing Argument to Functions, Optional Argument, Returning Value from Function. Control Flow Statements: Conditional Statement, Loop Statement. Forms: Loading Showing and Hiding Forms, Working with Multiple Forms Controlling One Form within Another, Overview of C#, Structure of C#, Program C# in .Net.	8



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UNIT - III	GUI Programming with Windows Form with Properties Methods and Events: Text Box Control Label Control Button Control Listbox Combo Box Checked Box Picture Box Radio Button Pannel Scroll Bar Timer Control Adding Controls At Runtime Common Dialog Control: File Save Print Help. Designing Menus MDI Forms Overview of Dynamic Web Page Asp.Net Controls Applications Web Servers Web Form Controls Server Controls Client Controls Adding Controls to a Web Form Form Validation Controls: Client Side Validation Server Side Validation	8
UNIT - IV	Ado.Net Architecture, Create Connection, Accessing Data Using Data Adapters and Datasets Using Command & Data Reader, Data Bind Controls, Displaying Data in Data Grid. Data Form Wizard, Processing SQLI & Access Database Using Ado.Net, Object Model Connection, Object Command, Object Add, Delete Move & Update, Records to Dataset, Executing Queries	8
UNIT - V	XML in.Net: XML Basics, Attributes, Fundamental XML, Classes: Document Textwriter, Textreader XML, Validations XML,in Ado.Net the Xmladatadocument. Web Services: State Management- View State Session State Application State Web Service Description Language Building & Consuming a Web Service. Web Application Deployment Caching	8

References Books:

- 1 Steven Holzner Vb.Net Programming Black Book Dreamtech Publications
- 2 Evangelospetroustos-Mastering VB.Net -BPB Publications
- 3 Mathew -The Complete Reference ASP.Net Macdonald TMH
- 4 Professional ASP.Net- Wrox Publication
- 5 Stephen Walther-Active Server Pages 2.0 (Unleashed) : Techmedia
- 6 C# Programming Wrox Publication
- 7 Matt Telles -C# Programming Black Book Dreamtech Publication

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Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		SEMESTER - IV	
Subject & Subject Code		PROJECT WORK - MCOSC20S403	
Max. Marks		120 (Report) + 80 (Presentation) = 200	
Credit		Total Credits	
L	T	P	10
0	0	10	
Course Objectives:			
<p>1. To make them understand the concepts of Project Work for planning to execution of projects.</p> <p>2. To make them understand the feasibility analysis in Project Work and network analysis tools for cost and time estimation.</p> <p>3. To enable them to comprehend the fundamentals of Contract Administration, Costing and Budgeting.</p> <p>4. Make them capable to analyze, apply and appreciate contemporary project management tools and methodologies in Indian context.</p>			
Course Outcome:			
<p>1. Understand project characteristics and various stages of a project.</p> <p>2. Understand the conceptual clarity about project organization and feasibility analyses Market, Technical, Financial and Economic.</p> <p>3. Analyze the learning and understand techniques for Project planning, scheduling and Execution Control.</p> <p>4. Apply the risk management plan and analyse the role of stakeholders.</p> <p>5. Understand the contract management, Project Procurement, Service level Agreements and productivity.</p>			
Student Learning Outcomes (SLO):			
<p>After studying this course, you should be able to:</p> <p>1. develop plans with relevant people to achieve the project's goals</p> <p>2. break work down into tasks and determine handover procedures</p> <p>3. identify links and dependencies, and schedule to achieve deliverables</p> <p>4. estimate and cost the human and physical resources required, and make plans to obtain the necessary resources</p> <p>5. allocate roles with clear lines of responsibility and accountability.</p>			
<p>All the candidates of MSC (cs) are required to execute a Project and submit its Project-Report. These projects are to be carried out on real life problems. The detailed guidelines related to project work is given in the last section in the curricula. Please read carefully and make your project accordingly.</p>			

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UNIT - III	Basic UI design Styles & Themes •Form widgets Text Fields Layouts RelativeLayout TableLayout FrameLayout Linear Layout Nested layouts [dipdpispp] versus px styles.xml drawable resources for shapes Adapters Array Adaptersm BaseAdapters ListView and ListActivityCustom listview GridView using adapters Gallery using adapters Android Session and Session management	8
UNIT - IV	Content Providers SQL DML & DDL Queries in brief SQLiteDatabase SQLiteOpenHelper Cursor SQLite Programming Reading and updating Contacts Android Debug Bridge(adb) tool Broadcast Receivers Services Notifications Alarm Via service Customize Toast Dialogs Tabs Animated popup panels Grid view Spinner Thread AsyncTask XML Parsing Android JSON parsing using Volley How to create REST API for Android app using PHP Mysql Accessing Phone services(CallSMS)	8
UNIT - V	Fragments Introduction to fragments Fragments Life Cycle Fragments in Activity Google Maps V2 using Fragments Develop Fragment based UI designs (Fragment TabsListView etc) Location based Services GPS Geocoding Network connectivity services Sensors(Accelerometer Gyroscope) Using Wi-Fi& Bluetooth Google Cloud Messaging for Android App Widgets	8

References Books:

- 1 James C. Sheusi " Android Application Development for Java Programmers" Cengage Learning
- 2 Wallace Jackson "Android Apps for Absolute Beginners" Apress Isbn : 9788132211372
- 3 Michael Burton Donnferker "android Application Development for Dummies" Dummies Isbn : 9788126538775
- 4 Pradeep Kothari " android Application Development (with Kitkat Support)" Kogent Learning Solutions Inc. Black Book Dreamtech Press ISBN : 9789351194095
- 5 Charlie Collins Michael Galpin et.al. " android in Practice" Manning ISBN : 9789350042397

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Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		SEMESTER - IV	
Elective Paper		Open Elective	
Subject & Subject Code		Information Security (4B) - MCOSC20S405	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	5
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Course Objectives:

1. Aware and Understand the Challenges and Scope of Information Security.
2. Gain the Knowledge of Basic Security Concepts.
3. Learn and Understand the Importance of Cryptographic Algorithms and Their Uses.
4. Learn and Understand Access Control Mechanism Used for User Authentication and Authorization.
5. Understand and Practice the Sockets Layer (SSL).
6. Aware and Learn the Usages of Secure Internet Protocol (IP) and HTTPS

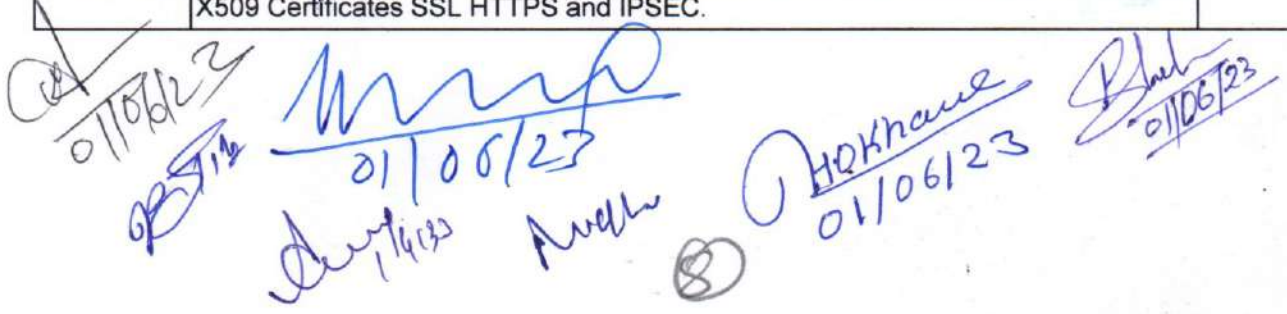
Course Outcome:

1. Explain the Principles of Cryptography and Cryptanalysis Including Symmetric and Asymmetric Encryption Hashing and Digital Signatures.
2. Explain the Fundamental Notions of Threat Vulnerability Attack and Countermeasure.
3. Be Able to Identify the Security Goals of an Information System Point Out Contradictory Goals and Suggest Compromises.
4. Identify and Classify Particular Examples of Attacks.
5. Implement the Various Security Algorithms.
6. Analyze the Root Causes of Attacks & Suggest Appropriate Solution for Different Types of Security Breach Scenario.

Student Learning Outcomes (SLO):

1. define what information is
2. appreciate the value of information to the modern organisation
3. understand the CIA triad of Confidentiality, Integrity and Availability
4. appreciate the difficulties that arise when valuable information needs to be shared
5. identify the five leading-edge resources that have up-to-date information on information security.

Unit	Syllabus	Periods
UNIT - I	Introduction: Security Concepts:-Confidentiality Integrity and Availability Threats Risks Sources of Threats Attacks Classification Cryptography Confusion Vs. Diffusion Stream Ciphers Vs. Block Ciphers Classical Cryptography Objectives of Cryptography Secret-Key and Public-Key Cryptography Cryptanalysis RC5 Blowfish.	8
UNIT - II	Block Ciphers Block Cipher Principles Feistel Networks S-Boxes and P Boxes Block Cipher Des Elementary Number Theory Prime Numbers Factoring Modular Arithmetic GCD Modular Square Roots	8
UNIT - III	Key Exchange: Diffie-Hellman Public-Key Encryption: RSA Entity Authentication: Passwords Challenge-Response Algorithms Digital Signature Digital Certificates X509 Certificates SSL HTTPS and IPSEC.	8



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UNIT - IV	Introduction to Hash Function : Message Digest: MD5 and SHA-1 Attacks on Hash Functions. MD Family SHA Family Trapdoor Functions Digital Signatures Overview of GPG Seahorse Frontends- Kleopatra Enigmail.	8
UNIT - V	Network Issues Public-Key Infrastructure (PKI) Kerberos Encryption Using Non-Cryptographic Tools (VI Zip) Authentication Principles and Methods Passwords Two-Factor Authentication Steganography Penetration Testing and Ethical Hacking	8

References Books:

- 1 William Stallings Cryptography and Network Security PHI
- 2 Bruce Schneier- the Mathematics of Encryption- American Mathematical Society
- 3 Atulkahate "Cryptography and Network Security" TMH.
- 4 Calabrese Info Security Intelligence-Cryptography Principles Appl- Cengage Learn.
- 5 Krawetz- Intro to Network Security Cengage Learning.
- 6 Mark Stamp Information Security: Principles and Practice John Wiley and Sons
- 7 Matt Bishop Computer Security Art and Science Pearson Education.

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Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		SEMESTER - IV	
Elective Paper		Open Elective	
Subject & Subject Code		Big Data Analytics (4C) - MCOSC20S406	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	5
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Course Objectives:

1. Familiarize the Students with Most Important Information Technologies used in Manipulating Storing and Analyzing Big Data.
2. This Course Gives Students all Around Learning of the Big Data Framework using Hadoop and Spark Including Yarn HDFS and Mapreduce
3. It Provide an Overview of Approaches Facilitating Data Analytics on Huge Datasets.

Course Outcome:

1. Ability to identify the characteristics of datasets and compare the trivial data and big data for various applications.
2. Demonstrate an ability to use Hadoop framework to efficiently store retrieve and process Big Data for Analytics.
3. Implement several Data Intensive tasks using the Map Reduce Paradigm

Student Learning Outcomes (SLO):

1. Students will demonstrate knowledge of big data analytics.
2. Students will demonstrate the ability to think critically in making decisions based on data and deep analytics.
3. Students will demonstrate the ability to use technical skills in predicative and prescriptive modeling to support business decision-making.
4. Students will demonstrate the ability to translate data into clear, actionable insights.
5. Students will demonstrate effective communication skills that facilitate the effective presentation of analysis results

Unit	Syllabus	Periods
UNIT - I	Big Data- Introduction Characteristics Types Elements Traditional Vs. Big Data Business Approach Big Data Analytics Advantages Applications Distributed & Parallel Computing for Big Data Components in Big Data Architecture Virtualization Approaches.	8
UNIT - II	Statistics and Probability: Sampling Techniques - Data Classification Tabulation Frequency and Graphic Representation Measures of Central Value - Mean Mode Median Random Variable and Probability Theory.	8
UNIT - III	Hadoop- Introduction Features Advantages Versions Key Considerations of Hadoop RDBMS vs Hadoop Hadoop Ecosystem HDFS - Architecture Features Commands Processing Data with Hadoop Hadoop Yarn.	8
UNIT - IV	Mapreduce Framework Features Uses Working on Mapreduce Mapreduce Input and Output Operations Exploring Map and Reduce Functions Mapreduce Optimization Technique HBASE Introduction Architecture HBASE in Hadoop Applications.	8

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UNIT - V	Processing Data with Mapreduce Task Execution & Environment – Installation of Eclipse Hadoop Java Development Kit and Linux Ubuntu OS Mapreduce Program Steps to Obtain Word Count Functionality of Input Format- Inputsplit Recordreader Fileinputformat Output Process of Fileoutputformat – Outputformat Recordwriter Role of Combiner Partitioner Debugging Mapreduce.	8
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RECOMMENDED BOOKS –

- 1 Rob Kitchin The Data Revolution: Big Data Open Data Data Infrastructures And Their Consequences SAGE Publications Ltd
- 2 Croll and B. Yoskovitz Lean Analytics: Use Data to Build a Better Startup Faster o'reilly
- 3 Mayer-Schönberger and K. Cukier Big Data: A Revolution That Will Transform How We Live Work and Think
- 4 Bernard Marr-Big Data in Practice Wiley publication.
- 5 E. Siegel-Predictive Analytics: The Power to Predict Who Will Click Buy Lie or Die

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School of Basic & Applied Sciences

Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		Semester - IV	
Subject & Subject Code		Computer Lab-4 - MCOSC20S407	
Max. Marks		100 [80+20]	
Credit		Total Credits	
L	T	P	5
0	0	5	

List of Experiments on Dot Net

1. Rocket Launching.
2. Calculator Simple
3. Calculator Scientific
4. Video Game with Sounds and Animation
5. Five Loops for Finding Average of N Numbers.
6. Word Editor.
7. Library Management System Using Access
8. Web Browser
9. Student Management System
10. Suitable Project of Your Choice.

List of Experiments on Python

1. Program to demonstrate basic data type in python
2. Program to demonstrate operators in python A cashier has currency notes of denominations 10 50 and 100.If the amount to be withdrawn is input through the keyboard using input() function in hundreds find the total number of currency notes of each denomination the cashier will have to give to the withdrawer
3. Program to demonstrate list and tuple in python
4. Write a program in Python A library charges a fine for every book returned late. For first 5 days the fine is 50 paise for 6-10 days fine is one rupee and above 10 days.fine is 5 rupees. If you return the book after 30 days your membership will be cancelled.
5. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message
6. Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate of Rs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work

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- for fractional part of an hour two numbers are entered through the keyboard write a program to find the value of one number raised to the power of another.
7. Write a function that receives marks received by a student in 3 subjects and returns the average and percentage of these marks. Call this function from main() and print the result in main
 8. Write a program to read a file and display its contents
 9. Write a program to demonstrate database connectivity in python.

List of Practical:

1. Installing android Environment
2. Create "Hello World" Application. That Will Display "Hello World" in the Middle of the Screen in the Emulator. Also Display "Hello World" in the Middle of the Screen in the android Phone.
3. Create an Application with Login Module. (Check Username and Password).
4. Create Spinner with Strings Taken from Resource Folder (Res >> Value Folder) and On Changing the Spinner Value Image Will Change.
5. Create a Menu with 5 Options and Selected Option Should Appear in Text Box.
6. Create a List of All Courses in Your College and On Selecting a Particular Course Teacher in -Charge of That Course Should Appear At the Bottom of the Screen.
7. Create an Application with Three Option Buttons On Selecting a Button Color of the Screen Will Change.
8. Create and Login Application as Above. On Successful Login Pop Up the Message.
9. Create an Application to Create Insert Update Delete and Retrieve Operation On the Database.
10. Create a Simple Application Using android Resources.
11. Create a Simple Application Using Layouts.
12. Create a Simple Application Using Intents.
13. Create a Simple Application Using User Interfaces.
14. Create a Simple Application for Playing Audio and Video Files.
15. Create a Simple Application Using Database Connectivity with Sqlite Database..

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School of Basic & Applied Sciences

Class		MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)	
Semester/Year		SEMESTER - IV	
Subject & Subject Code		Project Work – MCOSC20S403	
Max. Marks		200 [160+40]	
Credit		Total Credits	
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PROJECT WORK GUIDELINES

Guidelines for Project

The Master of Science (CS) (MSC (CS)) programmer is designed with the objective to prepare the students to take up positions in IT industries as Programmer Systems Designer, Software Engineer and Project Managers etc. The curricula are designed to provide students comprehensive knowledge covering the skills and core areas of computer science in theory and practical's. With the same objective, project is part of curricula in last semester of MSC (CS). In the project work students are supposed to develop quality software solutions by applying theoretical and practical knowledge of various courses learnt. The Project work constitutes a major component in the course it needs to be carried out with due care and should be executed with seriousness by the students with essential foundation principles and practices to develop effective ways to solve computing problems. **Objectives**

The objective of the project is to help the student develop the ability to apply theoretical and practical tools / techniques to solve real life problems related to industry academic institutions and research laboratories. After the completion of this project work the student should be able to describe the Systems Development Life Cycle (SDLC) in their carried out project::

- Evaluate systems requirements.
- Evaluate a problem definition.
- Collect information to determine requirements.
- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.
- Construct and evaluate data dictionaries/ decision trees/ decision table.
- Create and evaluate graphical tools as systems flow charts, entity-relationship (er) diagrams and state transition diagrams.
- Preparation of Software Requirement Specifications (SRS) and hardware specifications.
- Plan the systems design phase of the SDLC.
- Identification of Functional & Non-functional design requirements.
- Design and evaluate system outputs.
- Design and evaluate systems inputs.
- Design and evaluate validity checks for input data.
- Design and evaluate user interfaces.

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School of Basic & Applied Sciences

- Perform coding for the project.
- Prepare documentation of project
- Perform various testing techniques/strategies.
- Be able to generate various reports in project.
- Able to deploy the project on machine/lab/real time environment
- Identification of the maintenance procedures.
- To decide the future scope and further enhancement of the system.
- Plan for appendices (if any) to be placed in support with the project report documentation.

Types of Project

The majority of the students are expected to work on real-life project preferably in some industry/ research and development laboratories / educational institution / software company. However, it is not mandatory for a student to work on a real-life project. The student can formulate a project problem with the help of her/his supervisor and if approved, the student commences working on it.

PROJECT PROPOSAL FORMULATION

The project proposal should be prepared in consultation with Supervisor. Approval of the project proposal is mandatory to continue and submit the project work. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken.

The project proposal should contain complete details in the following form:

1. Title of the Project
2. Introduction and Objectives of the Project, Project Scope
3. Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems. Cloud/ Security/ Data Analytics etc.)
4. Analysis (DFDs ER Diagrams Class Diagrams, Module Specification, Time Line etc. as per the project requirements).
5. A complete structure which includes:
 - Number of modules and their description to provide an estimation of the student's effort on the project.
 - Data Structures as per the project requirements for all the modules
 - Process Logic of each module
 - Reports generation.
6. Tools / Platform Hardware and Software Requirement specifications
7. Security mechanisms
8. Project Team members (If any)
9. Organization/ Company details with profile of supervisor (If project is carried out outside the department)

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Project Work Guideline

- The project work should normally include software development.
- Preferably not more than one student is permitted to work on a project. However in case a large project at most two students may work on the same project. If 2 students have been allowed to work on a project the project synopsis and project reports by them must include only different modules undertaken / worked upon individually. Each student must submit a separate project proposal and a separate project reports related to her/his modules. Completely identical project synopses and/or project reports are not allowed. Only introductory and possibly concluding remarks may be similar or common. Each student has to undergo all the phases
- A candidate is required to present the progress of the Project work during the semester as per the schedule provided by the Study Institute.
- The Study Institute evaluate the progress of the project on the basis of following
 - i. Project Analysis & Planning
 - ii. Project Design & Development
 - iii. Project Testing & Validation
 - iv. Project Documentation
 - v. Project Presentation & Viva
- The Project Report is evaluated for total of 200 marks. Normally the evaluation shall be done by separate heads as Internal (40 marks) and External (160 marks).

PROJECT REPORT FORMULATION :

Good quality white executive bond paper A4 size should be used for typing and duplication. Care should be taken to avoid smudging while duplicating the copies. Page Specification: Left margin- 3.0cms, Right margin- 2.0 cm, Top margin 2.54 cm, Bottom margin 2.54 cm, Line Spacing – Single, Font Size – 12 for normal Text, Font Size 14 Headings and 16 for Chapter Heading, Page Numbers - All text pages as well as Program source code listing should be numbered at the bottom of the pages.

The project report should contain the following:

1. Front Page – Pink Color
2. The Approved Performa and Synopsis.
3. Certificate from the Supervisor with her/his signature and date.
4. Certificate from company/industry in their letter head (if project is carried out outside the department)

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5. Certificate of Originality/ Self Certificate

6. The Project Report documentation should include the following topics (as per the project requirements).

- Acknowledgement
- Table of Contents / Index with page numbering
- Introduction / Objectives of the project
- System Analysis
- Feasibility Study
- Software and Hardware Requirement Specifications
- System Design
- Coding
- Validation checks
- Implementation and Maintenance
- Testing (Testing techniques and Testing strategies used along with the test data and the errors listed for each test case).
- System Security measures (Implementation of security for the s/w developed)
- Reports Tables Figures should be properly numbered/labeled
- Screen Shots of Projects
- Conclusion
- Future scope and further enhancement of the Project
- Bibliography/ References
- Appendices (if required)

Two copies of the original project report in bound form are to be submitted. Each student is required to prepare individual copy of Project Report in CD and submit along with his/her Project report. The same must contain the report results screenshots errors databases source codes (wherever it is not feasible explicit approval from the supervisor must be obtained). Soft copy of labeled and signed project CD should be in a thick envelope pasted inside of the back cover of the project report.

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- PSM
- Ardhu
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School of Basic & Applied Sciences

PROJECT REPORT ON

“TITLE OF THE PROJECT ”

**Submitted in partial fulfillment of the requirement
for the award of the degree**

MASTER OF SCIENCE (COMPUTER SCIENCE) MSC (CS)

SESSION :20XX-20YY

Project Guided By:	Submitted By:
External Guide (if any) :	Name of Student
Internal Guide:	Enrollment No.
	Roll No.
MSC (CS)	Study Institute code No.
	Name of Students
	Enrollment No.
	Roll No.
	Study Institute code No.

Submitted to

Eklavya University Damoh

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PROJECT CERTIFICATE

This is to certify that the project report entitled _____ submitted to Eklavya University Damoh, in partial fulfillment of the requirement for the award of the degree of Master Of Science (Computer Science) Msc (Cs), is original work carried out by myself Mr/ Ms _____ with enrolment no. _____ under the Supervision of Prof./Dr./Mr./Ms. _____. The matter embodied in this project is genuine work done by myself and has not been submitted whether to this University or to any other University / Institute for the fulfillment of the requirement of any course of study.

Date:

Student

Name & Signature of the

Contact Details (Email, Phone & Address)

Verified by the Supervisor

Name & Signature of the Supervisor/s

Date:

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ACKNOWLEDGEMENT

This Major Project is the result of contribution of many mind. I would like to acknowledge and thank my project guide..... (Faculty Name) for his/ her valuable support and guidance. He/she guided me through the process from conception and till the completion of this project. I would also like to thank my class teacher/institute directorand my all my faculties..... I thank to lab staff members.....and other non-teaching members.

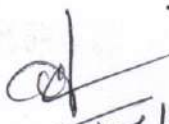
I am very thankful for the open-handed support extended by many people. While no list would be complete, it is my pleasure to acknowledge the assistance of my friends who provided encouragement, knowledge and constructive suggestions

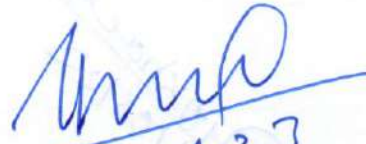
Signature of Student

(Name of student)

(Roll No -----)

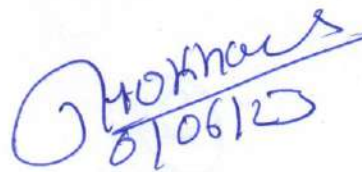
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SELF-CERTIFICATE

This is to certify that the Major Project report entitled "-----" is done by me, and it is authentic work carried out for the partial fulfillment of the requirements for the award of the degree of Master Of Science (Computer Science) Msc (Cs) under the guidance of.....(Faculty name). The matter and software embodies in this project has not been submitted earlier for award of any degree or diploma to the best of my knowledge and believes. Signature of Student

(Name of student)

(Roll No -----)

(Enrollment No -----)

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School of Basic & Applied Sciences

CERTIFICATE FROM PROJECT GUIDE

This is certify that this Major Project entitled " _____ " submitted in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Application MSC (cs) in session (years 20__ to 20__) to the Eklavya University Damoh, done by _____ (student name) is an authentic work carried out by his/ them at "....." (study centre name /department name) (-----Place) under my guidance. The matter and software embodied in this project work has not been submitted earlier for the award of any degree or diploma to the best of my knowledge and belief.

Signature of MSC (cs)

Teacher

(Project Guide)

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