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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kulkarni S.V. **Department: Comp. sci**

Program: MSC FY **Subject**: Comp. Sci

Course Code: **CS-101** **Paper Title: Comp. Archi & Microprocessor**

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	**Design Methodology**	Evolution of Computers, Introduction to system modeling, Design Methodology of Combinational and Sequential circuits-Gate level, Register level and Processor level.	Classify the computer designing
2	**Binary Arithmetic**	Fixed point arithmetic's and algorithms for addition, subtraction, multiplication and division, Floating point arithmetic's and algorithms for addition, subtraction.	Classify the binary architecture
3	**Processors Design & Control Units**	CPU organization, Data representation, Instruction Sets –Format, types, Implementation, CICS and RISC, Control Unit-Hardwired control and design examples, Micro programmed control unit, pipeline control, Interrupt and their types and Branch Instruction processing.	Classify the designing of process & controlling unit of microprocessor
4	**Memory Organization**	Memory Technologies, Memory System, Virtual memory, Memory hierarchies, Main memory -allocation, Segmentation, High speed-Cache Memory, interleaved and associative memories.	Analyze the memory structure of microprocessor
5	**8085 & 8086 Microprocessor**	**8085 Microprocessor:** Architecture of 8085 Microprocessor, Features of 8085, Timing diagram of Memory read , memory write, Op code fetch and execute cycle.	Architecture of microprocessor

		8086 Microprocessor: Architecture of 8086 Microprocessor-EU and BIU, Features of 8086, Pin diagram of 8086, Addressing modes, Instruction set classification, Assembly language programming of 8086	

Specify Course Outcome: Students will acquire skill of Assembly Language programming using 8086 Microprocessor. Student will be familiar with Internal Processing of Computers

Specify Program Outcome: To develop Understanding of Internal Architecture of Computer. To aware students about Basics of Microprocessor & Assembly Language Programming

Signature of Teacher

Kulkarni S.V.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Dr P B Khanale **Department: Computer Science**

Program: MSC FY **Subject**: Comp. Sci

Course Code: **CS-102** **Paper Title: OOP Concepts using C++**

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	**Introduction and basic concepts of C++**	Procedure Oriented Programming, Object Oriented Programming Paradigm, Basic concepts of OOP's, Benefits and Applications, Structure of C++ program.	Differentiate between procedure oriented and object oriented programming languages
2	**Tokens, Operators and Functions in C++**	Keywords, Identifiers, Data-types, Operators in C++, Operator precedence and associatively, Control structures, branching and looping statements, Function, function prototype, default arguments, Reference variable, call by reference, return by reference, Inline function, function overloading .	Identify and list different constructs of C++
3	**Class and object, Constructor and destructor**	**Class and object:** Specifying a class and object, Nesting of member function, Memory allocation for objects, Static data member, static function, Friend function. **Constructor and destructor:** Introduction to Constructor, Types of constructor, Destructor	Write OOP programs using classes
4	**Inheritance and polymorphism**	Types of inheritance, Virtual base class, Operator overloading (Unary and binary), Virtual function and there rules, Pure virtual function, Abstract class, Pointer to object, This pointer.	Practice inheritance and polymorphism

5	**Input / Output Operation**	Console I/O operation, formatted I/O, unformatted I/O, C++ classes for console I/O, C++ stream classes for file I/O, Opening and closing file, sequential and random access, Error handling during a file operation, command line arguments, Introduction to Templates.	Create Data files using C++ IO system

Specify Course Outcome: Write C++ programs for real life applications

Specify Program Outcome: Design and create software solutions for various problems

Signature of Teacher

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Surnar S.B. **Department: Computer Science**

Program: MSc FY **Subject**: **Computer Science**

Course Code: CS-103

Paper Title: Mathematical Foundation for Computer Science

Unit Number	Unit Name	Topics	Unit-wise Outcome
1		Sets, Venn diagrams, Operations on Sets, Laws of set theory, Power set and Products, Partitions of sets, The Principle of Inclusion and Exclusion.	Total sets theory and their principle and laws can study
2	.	Propositions and logical operations, Truth tables , Equivalence, Implications ,Laws of logic, Normal Forms, Predicates and Quantifiers, Mathematical Induction	Mathematical induction and truth tables ,logical operation
3		Relations, Paths and Digraphs, Properties and types of binary relations , Operations on relations, Closures, Warshall_s algorithm, Equivalence and partial ordered relations, Poset, Hasse diagram	Different types graphs operations and algorithm can find out

4		Permutations, Combinations, Elements of Probability, Discrete Probability and Conditional Probability, Generating Functions and Recurrence Relations, Recursive Functions, Introduction to Functional Programming	Relations, Functions, Permutations, Combinations, Elements of Probability study to slove math problem
5		Graphs Definitions, Paths and circuits: Eulerian and Hamiltonian, Types of graphs, Sub Graphs Isomorphism of graphs.	Graphs, Types of graphs, Paths and circuits study
6		Algebraic structures with one binary operation: semigroup, monoid and group, Abelian group Isomorphism, Homomorphism and Automorphism, Cyclic groups, Normal subgroups, Codes and group codes	Algebraic structures with one binary operation and different Cyclic groups can study

Specify Course Outcome: Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving. Ability to understand use of functions, graphs and their use inprogramming applications. Apply discrete structures into computing problems, formal specification, artificialintelligence, cryptography, Data Analysis.

Specify Program Outcome: Apply knowledge of mathematics, science and algorithm in solving Computer problems.Generate solutions by understanding underlying computer science environment.Utilize the techniques, skills and modern tools, for actual development process.Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings in actual development work.Research insights and conduct research in computing environment.

Signature of Teacher

Surnar. S.B

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: khairajani S.U **Department: Computer science**

Program: Msc fy **Subject**: computer science

Course Code: CS-104 B Electiveaper

Title: Computer Network

Unit Number	Unit Name	Topics	Unit-wise Outcome
UNIT I	Introduction to computer networks and Internet	Understanding of network and Internet, The network edge, The network core, Understanding of Delay, Loss and Throughput in the packet-switching network, protocols layers and their service model, History of the computer network	Classify the computer network
UNIT II	Application Layer	Principles of computer applications, Web and HTTP, E-mail, DNS, Socket programming with TCP and UDP	Classify the network access to application
UNIT III	Transport Layer	Introduction and transport layer services, Multiplexing and Demultiplexing, Connection less transport (UDP), Principles of reliable data transfer, Connection	Classify the port and reliability

		oriented transport (TCP), Congestion control.	
UNIT IV	Network Layer	Introduction, Virtual and Datagram networks, study of router, IP protocol and addressing in the Internet, Routing algorithms, Broadcast and Multicast routing	Apply for ip addressing
UNIT V	The Link layer and Local area networks	Introduction and link layer services, error-detection and correction techniques, Multiple access protocols, addressing, Ethernet, switches	Classify the switches , mac addressing
UNIT VI	Introduction to LAN	Devices, Topologies, Tools, Cables, Configuration	Classify the network type

Specify Course Outcome: analyze,specify and design the topological and routing strategies for an IP based networking infrastructure .Have a working knowledge of datagram and internet socket programming

Specify Program Outcome: To understand the basic concepts of computer network and firm foundation for understanding how data communication occurring using computer network. It is based around the OSI Reference Model which deals with the major issues and related protocol studies in the various layers of the model.

Signature of Teacher

Khairajani S.U

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Pro-forma for program and course outcomes (2.6.1)

Department: Computer Science

Program: MSc FY(I-Sem) **Subject** :Computer Science

Course Code: CS-105

Paper Title: Lab -1 : C++ Programming

Topics	**Outcome**
At least 15 C++ programs	Expand programming skill in C++ and concepts of OOPs.

Specify Course Outcome:

- Enhance skill in C++ programming.
- Learn fundamentals of advanced internet programming languages.

Specify Program Outcome:

- Generate foundation for student to learn other Object Oriented Programming Languages.
- Improve advanced programming languages faster which is useful for foundation of software development.

Signature of Teacher

Deshmukh G.V.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: khairajani S.U **Department: Computer science**

Program: Msc FY **Subject**: computer science
Course Code: CS-106

Paper Title: ALP using 8086 Microprocessor

no	Program	pro Outcome
1	Program for division of multiplication by single byte	Build the Microprocessor & Assembly Language Programming
2	Program for averages	
3	Program for arranging number in assenting order	
4	Program for multiplication of two bytes	
5	Program for addition no byte	
6	Program for subtraction	
7	Program for add no words	
8	Program for calculate the average	
9	Program for change directory	
10	Program for remove directory	
11	Program for factorial	
12	Program for convert upper to lower	

13	Program to calculate the average bitwise	
14	Program for subtraction of two word	
15	Program for addition of given array element	

Specify Course Outcome: Students will acquire skill of Assembly Language programming using 8086 Microprocessor will be familiar with Internal Processing of Computers

Specify Program Outcome: classify of Internal Architecture of Computer To develop Understanding of Internal Architecture of Computer To aware students about Basics of Microprocessor & Assembly Language Programming

Signature of Teacher

Khairajani S.U

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Khaja M.M **Department: Comp. Sci**

Program: MSC FY SEM I **Subject**: comp Science

Course CodeCS-108 **Paper Title: PC Assembly and Maintenance**

- **Specify Course Outcome:**
- Practically understand the PC and surrounding peripherals. The student will assemble / setup and
- upgrade personal computer systems; install OS and other application software, diagnose and isolate faulty
- components; optimize system performance and install / connect peripherals.
- **Specify Program Outcome:**

Signature of Teacher

Khaja M.M

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Sardeshmukh R.P. **Department:**Computer Science

Program: Msc Fy **Subject**: Computer Science

Course Code: CS-201

Paper Title: Design and Analysis of Algorithms

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	Introduction to data structure	Concepts of data and algorithm, Time and space Complexity of a given algorithm	Students will be skilled to select appropriate design techniques to solve various problems problems.
2	Divide and Conquer	General Method, Binary search, Merge sort, Quick sort, Strassen's matrix multiplication	This course will aware the implementation of various advance algorithms to solve real world problem
3	Greedy method	General method, Knapsack problem, Optimal storage on tapes, Job sequencing with deadlines, Optimal merge pattern, Minimum spanning tree, Shortest path	Ability to analyze the performance of algorithms.
4	Dynamic Programming	The general method, Multistage graphs, Optimal binary search tree,	Ability to choose appropriate algorithm

		Reliability Design, Travelling sales person problem	design techniques for solving problems.
5	Basic search, traversal techniques and Backtracking	Binary tree traversal Preorder, Inorder and Postorder Traversal, Breadth first search(BFS), Depth first search(DFS), **Backtracking:** The general method, 8-Queens problem, Sum of subsets, Graph coloring, Hamiltonian cycle.	Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs.

Specify Course Outcome: Students will be skilled to select appropriate design techniques to solve real world problem.

Specify Program Outcome: To learn advance algorithm techniques that are related to real life problem.

Signature of Teacher: Sardeshmukh R.P.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: khairajani S.U **Department: Computer science**

Program: Msc fy **Subject**: computer science

Course Code: **CS-202**

Title: Software Engineering

Unit Number	Unit Name	Topics	Unit-wise Outcome
UNIT I	**Software and Software Engineering**	The Evolving Role of Software, Software Characteristics, Categories of Computer Software, The Software Myths, Software Engineering – A layered Technology, The software process, The nature of Software, Legacy Software.	Classify the computer network
UNIT II	**Process models**	A generic process model, A Process Framework, The capability Maturity Model Integration (CMMI), Process Patterns ,Process Assessment, The Waterfall Model, Prototyping Model, Spiral Model, Fourth generation techniques, Personal software process, Team software process, Process Assessment and improvement.	Classify the network all the process model
UNIT III	**Requirements Engineering & Design concepts**	Requirements Engineering, Initiating the Requirements Engineering Process, Eliciting Requirements, Negotiating Requirements, Validating Requirements, Developing use cases, Design Process and Design Quality, Design Concepts,	Classify the requirement of software and designing concept of software

		The Design Model, Pattern Based Software Design, Web App Design Quality, Design Goals, Web App Engineering Layers, The Web Engineering Process, Web Engineering Best Practices. (UDP), Principles of reliable data transfer, Connection oriented transport (TCP), Congestion control.	
UNIT IV	**Software Testing Strategies**	Software Testing fundamentals, A strategic Approach to software Testing, Strategic Issues, Test Strategies for Conventional Software, Validation Testing, System Testing, Debugging, White Box Testing, Black Box Testing, Control Structure Testing, System Testing, Model based Testing, Debugging Process, Debugging Strategies, Correcting the errors.	Apply the all the software testing and strategies

Specify Course Outcome: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics , Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle

Specify Program Outcome: Learn various methods of software development, Apply various software testing techniques.

Signature of Teacher

Khairajani S.U

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Bhise G.G **Department: Computer Science**

Program: MSc FY **Subject**: **Computer Science**

Course Code: **CS-203**

Paper Title: Programming with VB .NET

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	Introduction to Visual Programming using VB.Net	. Event-Driven Programming , Installing Visual Basic 2010, The Visual Studio 2010 IDE 6, The Profile Setup Page, The Menu, The Toolbars, Creating a Simple Application, Windows in the Visual Studio 2010 IDE, The Toolbox, Modified Hungarian Notation, The Code Editor	Introduction to Visual Programming using VB.Net and overview of visual Studio 2010 and understanding IDE
2	. Variables and Dates	**Comments and Whitespace**: Comments, Whitespace, **Data Types**: Numbers, Common Integer Math Operations, Integer Math Shorthand,	Classify data types , operators and using date and how to working with strings

		The Problem with Integer Math, Floating-Point Math, Other States, Single-Precision Floating-Point Numbers, **Working with Strings**: Concatenation, Using the Concatenation Operator Inline, More String Operations, Substrings, Formatting Strings, Localized Formatting, Replacing Substrings, **Using Dates**: Formatting Date Strings, Extracting Date Properties, Date Constants, Defining Date Literals, Manipulating Dates, Boolean	
3	Storing Variables and Methods	Binary, Bits and Bytes, Representing Values, Converting Values **Methods:** Why Use Methods?	Storing Variables and Methods and method why use and their importance
4	Controlling the flow, Array and Data Structure	**The If Statement**: The Else Statement, Allowing Multiple Alternatives with ElseIf, Nested If Statements, Single-Line If Statement, Comparison Operators, Using Not Equal To, Using the Numeric Operators, The And and Or Operators, Using the And Operator, More on And and Or String Comparison, **Select Case**: Case-Insensitive Select Case, Multiple Selections, the Case Else Statement, Different Data Types with Select Case	Analysing the flow, Array and Data Structure if statement,loops,select case and how to apply in programming

		Loops: The For ... Next Loop, Using the Step Keyword, Looping Backwards, the For Each ... Next Loop, The Do ... Loop Loops, Do While ... Loop, Acceptable Expressions for a Do ... Loop, Other Versions of the Do ... Loop, Nested Loops, Quitting Early, Quitting Do ... Loops, Infinite Loops **Data Structure Arrays**: Defining and Using Arrays, Using For Each ... Next, Passing Arrays As Parameters, Sorting Arrays, Going Backwards, Initializing Arrays with Values	
5	Building Windows Applications **and Menus**	**The If Statement**: The Else Statement, Allowing Multiple Alternatives with ElseIf, Nested If Statements, Single-Line If Statement, Comparison Operators, Using Not Equal To, Using the Numeric Operators, The And and Or Operators, Using the And Operator, More on And and Or String Comparison, **Select Case**: Case-Insensitive Select Case, Multiple Selections, the Case Else Statement, Different Data Types with Select Case **Loops:** The For ... Next Loop, Using the Step Keyword, Looping Backwards, the For Each ... Next Loop, The Do ... Loop Loops, Do While ... Loop, Acceptable	Classify Windows Applications and Menus controls, understanding array and using array

		Expressions for a Do ... Loop, Other Versions of the Do ... Loop, Nested Loops, Quitting Early, Quitting Do ... Loops, Infinite Loops **Data Structure Arrays**: Defining and Using Arrays, Using For Each ... Next, Passing Arrays As Parameters, Sorting Arrays, Going Backwards, Initializing Arrays with Values **Understanding Menu Features**: Images, Access Keys, Shortcut Keys, Check Marks, The Properties Window, Creating **Menus**: Designing the Menus, Adding Toolbars and Controls, Coding Menus, Coding the View Menu and Toolbars	

Specify Course Outcome: 1. To provide the knowledge of .Net framework along with VB.Net language
2. To skill the students for developing windows base applications.
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Specify Program Outcome: 1. Students will able to develop simple as well as complex applications using .Net framework
2. Students will learn to use web applications for creating GUI based programs

Signature of Teacher:

Bhise G.G

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Dr P B Khanale **Department: Computer science**

Program: Msc fy **Subject**: computer science

Course Code: **CS-204 B Elective** **Title: Compiler Designing**

Unit Number	Unit Name	Topics	Unit-wise Outcome
UNIT I	**Introduction to Compilers and Programming Languages**	Compilers and translators, The structure of compiler, Compiler writing tools, High level programming languages, Definitions of programming languages, A lexical and syntactic structure of a language, Data structures, Operators, Statements.	Identify structure of compiler
UNIT II	**Lexical Analysis & Syntax Analysis**	Lexical analysis, Role of a Lexical analyzer, A simple approach to the design of lexical analyzer, regular expressions, Syntax analysis, Finite automata, Minimizing number of states of a DFA, Implementation of a lexical analyzer, Context free grammars.	Build Lexical Analyzer
UNIT III	**Basic parsing techniques**	Introduction to parsers, Shift reduce parsing, Top-down parsing, Operator Precedence parsing, Predictive parsers, LR, SLR and LALR parsers., Web App Engineering Layers, The Web Engineering Process, Web Engineering Best Practices. (UDP), Principles of reliable data transfer, Connection	Build syntax Analyzer

		oriented transport (TCP), Congestion control.	
UNIT IV	**Syntax Directed Translation and Symbol tables**	Introduction, Syntax directed Schemes5.3 Implementation of Syntax directed translators, Intermediate code, Postfix notation and evaluation of postfix expressions, Parse trees and syntax trees Symbol Tables -The contents of a symbol table, Data structures for a symbol table	Construct Intermediate Code
Unit-5:	**Error detection and recovery and Code Optimization**	Errors, Lexical-phase errors, Syntactic phase errors, Semantic errors. Introduction to Code Optimization: Sources of optimization, Loop optimization	Identify Errors in compilation

Specify Course Outcome: Construct your own compiler

Specify Program Outcome: Build software systems for real life applications

Signature of Teacher

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Surnar S.B. **Department:Computer Science**

Program: MSC FY **Subject**: **Computer Science**

Course Code: **CS-205**

Paper Title: Vb.Net Programming

Topics	**Unit-wise Outcome**
1. Program for Installing Visual Basic.NET 2. Program for Creating a simple Application 3. Program for Making decisions, If statement, Select case 4. Program for Loops Visual Basic.NET 5. Program for Working with collections and Lists 6. Program for Displaying Dialog Boxes 7. Program for The message Dialog Box 8. Program for The open dialog control 9. Program for Print dialog control. 10. Program for creating menus, context menus 11. Program for creating the toolbars	Programming Language are also used to build students logic To develop programs using operators and control statement.To describe an array.Student are able to develop application software.

12. Program for Inheritance, the Framework Classes 13. Program for Advanced array manipulation 14. Program for Working with data structures, Understanding Arrays 15. Program for Inheritance, the Framework Classes.	

Specify Course Outcome: Programming Language are also used to build students logic for programming.

a. Use Visual Studio IDE to design application .
b. Develop GUI Application using Form Controls and its events.
c. Apply Oject Oriented concepts in GUI Application

Specify Program Outcome: Student are able to develop application software.
Signature of Teacher :

Surnar S.B.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: bhise G.G. **Department:Computer Science**

Program: MSC FY **Subject**: **Computer Science**

Course Code: **CS-206** **Paper Title: compiler design**

Topics	**Unit-wise Outcome**
	.

Specify Course Outcome:

Specify Program Outcome:

Signature of Teacher :

Bhise G.G.

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Mr. Kuptekar Sawankumar Vijay **Department: Computer Science**

Program: M.Sc FY **Subject**: Computer Scienc **Course Code**: **CS-207 B**

Paper Title: Information Technology

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	Computer Organization, Memory and Storage	Introduction, Basic Computer Organization, Input Devices, Output Devices, Central Processing Unit, The System Bus Architecture, Memory or Storage Unit	Know about structure of computer
II	Information Technology Basics	Introduction, Need for Information Storage and Processing, Information Technology Components, Role of Information Technology, Information Technology and the Internet	Able to understand about information processing in the computer.
III	Internet and its Tools	Introduction, Internet Evolution, Basic Internet Terminology, Data over Internet, Modes of Data Transmission, Types of Networks, Types of Topologies, Protocols used in the Internet, Getting Connected to Internet Applications, Internet Applications, Computer Ethics,	Understand in details about the internet and its tools.

IV	Emerging Trends in IT	Introduction, Electronic Commerce (E-Commerce),Electronic Data Interchange (EDI) Smart Cards, Mobile Communication, Internet Protocol TV	Acknowledge the E-Commerce terms in details.
V	Computer Programming and Languages	Introduction, Planning a Computer Program, Steps for Program Development ,Problem Solving Tools, Program Control Structures, Generations of Computer Languages, Program Methodology, Programming Models	Acknowledge the details of computer languages, program methodologies and programming models.

Specify Course Outcome: Understand basic concepts in IT and their use in actual working

Specify Program Outcome: Introduce students to foundation of Information technology

Signature of Teacher

Kuptekar S.V

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Khaja M.M **Department: Comp. Sci**

Program: MSC FY SEM I **Subject**: comp Science

Course Code: CS- 208 **Paper Title: Networking Essentials**

Specify Course Outcome:

Networking Essentials deals with knowing what is a network, how to install, configure, and troubleshoot a computer network It includes knowledge of the fundamental building blocks that form a modern network, such as various cables, switches, routers, connectors, LAN-NIC cards and network operating

Specify Program Outcome:

It then provides in-depth coverage of the most important concepts in contemporary networking like connecting computers/ peripherals, servers and clients, Wi-Fi connectivity, etc. Students are expected to have the skills to build a network / LAN from scratch and maintain, upgrade, and troubleshoot an existing network

Signature of Teacher

Khaja M.M

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shaikh Khaja Jamil Mohiuddin **Department: Computer Science**

Program: MSc - SY **Subject**: Computer Science **Course Code**: CS – 301

Paper Title: Advance Database Administration

Unit Number	Unit Name	Topics	Unit-wise Outcome
UNIT – I	**Database Architecture**	Overview of database, pfile, spfile, Instance, Tablespaces, Datafiles, Other files, Oracle managed Files, Users, Schemas, Indexes, View, Sequences, Synonyms, Privileges, Roles, Clusters, Hash Clusters, Internal memory structure, SGA, PGA ,Background processes, External structure, Redo logs, Control files, Trace files, Alert logs, Creating database manually	**Understanding Architecture of Oralce**
UNIT – II	**Hardware configuration and consideration**	Architectural overview, Standalone hosts, Standalone hosts with disk array, Standalone, Hosts with disk shadowing, Multiple databases, Networked hosts, Networks of databases, Remote updates, Remote application options, Real application, Clusters, Multiple processors, The	**Implementation of Oracle database**

		parallel query and parallel load options, Client/server databases application, Standby databases	
UNIT – III	**Physical Databases Layouts**	Database file layouts, I/O connections among data files, I/O bottlenecks among all data files, Concurrent I/O among background processes, Defining recoverability and performance goals for the system, Defining the system hardware and mirroring architecture, Database space using overview, Implementation of the storage clause, Locally managed Tablespaces, Dictionary managed Tablespaces, Table segments, Index segments, Rollback segments, Temporary, Free space, Resizing Datafiles, Control files, Online redo log Files Deallocate space from segments, Shrinking Datafiles, Shrinking Tables, Clusters and indexes, Oracle managed files(OFA)	**Understand and implement Physical database.**
UNIT - IV	**Logical Database Layouts**	Describe logical structure of a database, Different types of Tablespaces, Changing the Tablespaces size, Allocating segments for temporary segments, Temporary segments in permanents Tablespaces, Changing tablespace status, changing tablespace storage settings, Oracle Managed Files (OMFs), Oracle Flexible Architecture (OFA), Different segments types and relationships, Extent usages, Block space utilization	**Understand and implement Logical Database.**

UNIT – V	**Backup – Recovery & Networked ORACLE**	Types of Logical and Physical backups, Implementations , Integrations of backup procedures, NOARCHIVELOG Mode, ARCHIVELOG Mode, Backup Methods –Closed Database Backup, Open Database Backup, Recovery in NOARCHIVELOG Mode, Recovery in ARCHIVELOG Mode, Recovery manager architecture, Recovery Manager Features, Using Recovery manager & RMAN, Using OEM backup manager, Generating lists and reports. Networked Oracle - Overview of SQL *Net and Net8 , Connect descriptors, Service names and Listeners, Net8 assistants, The multi-protocol interchange, Dedicated Server Processes, Oracle Shared Server, Benefits of Oracle Shared Server, Client Server application, Database links.	**Secure database using backup and recovery.**
UNIT – VI	**Database Security, Auditing and Database Tuning**	Security capabilities-Account security, Object privileges, System level roles and privileges, Implementing security-operating system security, Create user, Drop user, User profiles, and Password managements, Preventing password reuse, setting password complexity, Using password file for authentication, Auditing, Login audits, Action audits, Object audits, Protecting the audit trail. Tuning Databases -Tuning application design, Tuning	**Improve Performance tuning of oracle database.**

		SQL,Memory usage, Data storage, Data manipulation,Physical storage, Logical storage,reducing net traffic using OEM	

Specify Course Outcome: Students can be administration oracle database using this course.

Specify Program Outcome: Students are able to Implementation of software

Signature of Teacher

Khaja M.M

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: waghmare V.P **Department: Computer Science**

Program: M.Sc SY **Subject**: Computer Scienc

Course Code:CS-302 **Paper Title:** Java Server Pages, Servlets & Struts

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**An Overview of Servlets, JSP terminology and Servlet Basics**	A Servlets jobs, Why build web pages dynamically?, Advantages of Servlets over traditional CGI, The Role of JSP, Installing & Configuring the JDK & Apache Tomcat, Testing your setup, Web application – A Preview, Basic Servlet structure, A Servlet that generate plain text, A Servlet that generate HTML text, A Servlet package, The Servlet life cycle, The Single Thread model interface, Servlet debugging	Take a part in servlets ,its feature and advantages
II	**Handling Client Request: Form**	Reading Form Data from Servlet, Example: Reading three parameter, Example:	Elaborate dynamic web pages using servlet

	DATA,cookies and session tracking	Reading all parameter, Filtering String for HTML – specific character, Benefits of cookies, Some problem with cookies, Sending and receiving cookies, Using cooking to detect first time visitors, Using cookies attributes, The need for session tracking, Session tracking basics, Session tracking API, Browser session Vs server sessions, A Servlets that shows per client access counts	
III	**Overview of JSP technology and Invoking Java code with JSP scripting elements & The JSP page directives**	The Need for JSP, Benefits of JSP, Installation of JSP, Basic syntax, Invoking Java code from JSP, Using JSP Expression, Using Scriptlets to make parts of the JSP page conditional, The *Import* attribute, The *contentType*and *pageEncoding*attribute, Generating Excel Spreadsheet,The*session* attribute, The *isELIgnored*attribute, The *errorPage*and *isErrorPage*attribute	Web development process and various sever side technologies .
IV	**Including files and applets in JSP pages and Using Java Beans components in JSP documents**	Including pages at request time: the *jsp:include*action, Including pages at page translation time: the *include* directive, Forwarding request with *jsp:Forward,* Including applets for java plug-in, Why	Session authentication using cookies we learned in servlet

		use Beans?, What are Beans?, Using Beans: basic task, Example: *StrignBean.*	
V	**Integrating Servlets and JSP, Accessing database with JDBC**	Understaning the need for Model View Controller, MVC Framework, Architecture of approach, Implementing MVC with *RequestDispathcher,,* Summarizing MVC code, Using JDBC in General, Basic JDBC Examples, Simplifying Database Access with JDBC Utilities, Using Prepared Statements.	Take a part in JSP technologies ,its feature and advantages.

Specify Course Outcome: This course provides the necessary knowledge to design and develop dynamic ,database –driven application

Specify Program Outcome: After the completion of this course ,the student will be able to develop a small project independently

Signature of Teacher

Waghmare V.P

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kulkarni **S.V** **Department: Computer Science**

Program: M.Sc SY **Subject**: Computer Scienc

Course Code CS-303 **Paper Title :Data Mining & Data Warehousing**

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Introduction**	Basic Data Mining task, Data Mining Vs Knowledge discovery in databases, Data mining metrics, Social Implication of Data Mining	Basic concept of data mining task
II	**Related Concepts and Data Mining Techniques**	Database/OLTP systems, Information Retrieval, Decision Support Systems, Dimensional Modeling, OLAP, Web Search Engines, Statistical perspective on Data Mining, Decision Tree, Neural networks	Classify the techniques of data mining
III	**Classification**	Introduction, Statistical based algorithms, Distance based algorithms, Decision tree based algorithms, Neural network based algorithm.	Classification of algorithm in the data mining

IV	**Clustering andAssociation Rules**	Introduction, Hierarchical algorithms, Partitioned algorithms, Clustering large databases, Basic algorithms, Parallel and distributed algorithms	Describe the clustering and association rules
V	**Web Mining**	Introduction, Web content mining, Web structure mining, Web usage mining.	Introduction to web mining
VI	**Data Warehousing**	Data Warehousing – the only viable solution, Data Warehouse defined	Understanding the data warehousing

Specify Course Outcome: understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic function

Specify Program Outcome: to introduces various techniques for respiration of data in the real world

Signature of Teacher

Kulkarni **S.V**

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kausadikar J.N. **Department: Comp. Sci**

Program: Msc SY **Subject**: Computer Science

Course Code: CS-304 **Paper Title:** Digital Image Processing Using MATLAB

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	**Digital Image Processing Systems**	What is DIP?, Fundamental steps in DIP, Components of an Image Processing System, Elements of Visual Perception, Lights and Electromagnetic Spectrum, Image sensing and acquisition, Image sampling and quantization	Analyze images in the frequency domain using various transforms. Digital image processing is the use of computer algorithms to perform image processing on digital images.
2	**Introduction to Digital Image Representation**	Digital Image Representation, Read & Displaying Images, Data Classes & Image types, Converting between Data Classes and Image types	A digital image is a numeric representation, normally binary of a two dimensional image. Depending on whether image resolution is fixed, it may be of vector or raster type.
3	**Intensity transformation &Spatial filtering**	Intensity Transformation function, Histogram processing & Function plotting, Spatial filtering	intensity transformations operate on single pixels of an image for the purpose of contrast manipulation & image

			thresholding.
4	**Frequency Domain Processing**	2D –discrete Fourier transform, Filtering in frequency domain, Obtaining Frequency Domain Filters from spatial filters	Frequency domain refers to the analysis of mathematical functions or signals with respect to frequency, rather than time.
5	**Image Restoration**	A Model of the Image Degradation /Restoration Process, Noise Models, Restoration in presence of Noise only –spatial filtering, Periodic Noise Reduction by Frequency domain Filtering	image restoration is the operation of taking a corrupt/noisy image & estimating the clean, original image.
6	**Color Image Processing and Introduction to Wavelets**	Color Image Representation in MATALB, Converting to other Color Space, Introduction to Wavelets - Fast wavelet transform, Working with Wavelet Decomposition structures, Inverse Fast Wavelet transform	A color image is a digital image that includes color information for each pixels. A Wavelet is a mathematical function useful in digital signal processing& image compression. Wavelets make it possible to recover weak signals from noise.

Specify Course Outcome: Apply image enhancement and restoration techniques. Learn digital image fundamentals.

Specify Program Outcome: Use image compression and segmentation techniques. Learn to represent image in form of features.

Signature of Teacher

Kausadikar J.N.

DnyanopasakShikshanMandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Comp. Sci**

Program: MSC SY **Subject**: Comp.Sci

Course Code: CS-305 **Paper Title:** Research Methodology

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	Introduction, the Purpose and Product of Research	What is research?, Evaluating Research, The 6Ps of research, Reasons for doing Research, possible products, Finding and choosing research topics, evaluating the purpose and product of research.	Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.
2	Overview of the Research Process, Internet Research	A model of the research process, Alternative models of the research process, evaluating the research process, Background of the Internet and WWW, Internet research topics, The Internet and a literature review, The Internet and research strategies and methods, Internet research, the law and ethics.	Evaluate different models for research by using internet.
3	Reviewing the literature, Surveys and Design Creation	Purpose of literature review, literature resources, The Internet and literature reviews, conducting literature reviews, evaluating literature reviews, Define Surveys, Planning and Designing surveys, the internet and surveys,	Evaluation of literature, surveys for research

		Example of Surveys, Defining design and creation, Planning	
4	Experiments, Case studies, Action Research	Defining experiments, Planning and conducting experiments, The internet and experiments, Defining case studies, Planning and conducting case studies, The internet case studies, Defining Action research, Planning and conducting Action research, The internet and Action research	Case studies used for improvement of research work.
5	Interviews, Observations, Questionnaires	Defining Interviews, Planning and conducting Interviews, Group Interviews Internet based Interviews, Defining Observations, Planning and conducting systematic Observations, Planning and conducting participant Observations, The internet and Observations.	Evaluation of interview for research
6	Quantitative data analysis, Qualitative data analysis and Presentation of Research	Defining Quantitative data analysis, Types of Quantitative data analysis, Data coding, Visual aids for Quantitative data analysis, Using statistics for Quantitative data analysis, Qualitative data analysis-Introduction, Analysis textual data, Analyzing non-textual qualitative data, Grounded theory, Presentation of Research-writing up the research, conference paper presentations, Posters and exhibitions, software demonstrations, Presenting yourself, PhD vivas.	Preparation for presentation of research.

Specify Course Outcome:

• understand some basic concepts of research and its methodologies

• identify appropriate research topics

• select and define appropriate research problem and parameters

• prepare a project proposal (to undertake a project)

• organize and conduct research (advanced project) in a more appropriate manner

• write a research report and thesis

• write a research proposal (grants)

Specify Program Outcome:

- To familiarize participants with basic of research and the research process.
- To enable the participants in conducting research work and formulating research synopsis and report.

Signature of Teacher

Agarmore J.R

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kausadikar J.N. **Department: Comp. Sci**

Program: Msc SY **Subject**: Computer Science **Course Code**: CS-306

Paper Title: Computer laboratory 1(Adv Database Admin+ D.I.P)

No.	Program	Unit-wise Outcome
1	Program for create tablespace? and View Tablespace and Datafile Information?	To study the image fundamentals and mathematical transforms necessary for image processing. To study the image enhancement techniques. To study image restoration procedures.
2	Program for Add New Datafile to Increase the Size of a Tablespace?	
3	Program for Increase Size of an Existing Datafile? And Showing Parameters of the Controlfiles?	
4	Program for String Function?	
5	Program for order by clause?	
6	Program for Numeric Function?	
7	Program for Information about log file? and logfile members?	
8	Program for Some basic concepts in DIP using MATLAB?	
9	Program for Data classes conversion in DIP using MATLAB?	
10	Program for Converting the given image into Binary Image in DIP using MATLAB?	

11	Program for Intensity Transformation by using imadjust function in DIP using MATLAB?	
12	Program for Intensity transformation in truecolor images in DIP using MATLAB?	
13	Program for Image type conversion(grayscale images) in DIP using MATLAB?	
14	Program for image type conversion(indexed images) in DIP using MATLAB?	
15	Program for Image type Conversion(Truecolor Images) in DIP using MATLAB?	

Specify Course Outcome: Analyze images in the frequency domain using various transforms. Interpret image segmentation and representation techniques.

Specify Program Outcome: Evaluate the techniques for image enhancement and image restoration.

Signature of Teacher

Kausadikar J.N.