DnyanopasakShikshanMandal's
College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc FY **Subject**: Computer Science **Course Code**: OCS-101**Paper**

Title: Programming Logic Concepts

Unit Number	**Unit Name**	**Topics**	**Unit-wise Outcome**
I	UNIT I	Introduction, Generation of Computer, Classification of Computers, Hardware, Software, Applications of Computers, Computer Architecture: Central Processing Unit: Arithmetic Unit, Logic Unit, Control Unit, Main Memory Unit, Types of Memory, Input & Output Devices.	Understanding different parts of computers.
II	UNIT II	Introduction to Number systems, the problem solving aspects, top-down design, introduction to Algorithms, implementation ofalgorithms, the efficiency of algorithms, The analysis of algorithms, Flowchart and its symbols.	Understand how to solve problems using computers.
III	UNITIII	Exchanging the value of two variables, Counting, Summation of set of numbers, Factorial Computation, Generation of the Fibonacci sequence, reverses the Digits of an Integer.	Design algorithms to solve different problems.
IV	UNIT IV	The Smallest divisors of an integer, Generating prime numbers, Definition and Memory Representation of Array, Array order reversal, Array Counting, Finding the Maximum number in a set, sorting by exchange, Binary Search.	Design algorithms to solve different problems.

Specify Course Outcome:

1. Student will be able to design algorithms to solve different problems
2. Student will understand how to solve problems using computers

Specify Program Outcome:

- Solve real-world problems using programming logic
- Develop interactive applications
- Create games, simulations, and animations
- Implement decision-making systems
- Analyze data using logical operations
- Write algorithms to solve problems
- Develop step-by-step solutions
- Create flowcharts and pseudo code
- Implement logic using programming languages (e.g., C,C++,Python, Java)
- Test and debug code

Signature of Teacher

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc FY **Subject**: Computer Science **Course Code**: OCS-102

Paper Title: Designing of Web Pages Using HTML

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**UNIT I**	Internet, The Important of the Internet, World Wide Web, URLs, Web Brewers, Webserver, Internet Services, The web flow, objectives of the website, basic interface design, developing a store board for the website, navigation and Links within the site, checklist fordesigning.	-Formulate the purpose of using front-end and back-end web technologies
II	**UNIT II**	HTML, Basic elements, Lists, Linking HTML pages, Linking to URLs, Text formatting, Text Alignment, Character Styles, Fonts and Font Sizes, Using Colors for the Web, Preformatted text, Horizontal lines, Line break, Displaying special characters.	-Organize web pages using html Tags -Modify content of web page.
III	**UNIT III**	Images in HTML Pages, Tables in HTML, Frames, Creating Frames, frame attribute linking, complex framesets, Inline frames, Image maps.	-Effectively use Multimedia Component in to web sites -Manage links for webpages.
IV	**UNIT IV**	Form designing, Additional Layout features, Intro to CGI Scripting, Active Server Pages, Introduction to Embedding Multimedia and Java Applets, Inserting sound/Audio into Web Pages, Video file formats, Creating Marquee. Into. to JavaScript and Dynamic HTML, Structure of JavaScript.	-Produce Website using CSS and DHTML

Specify Course Outcome:

1. Be able to use the HTML programming language
2. Understand the principles of creating an effective web page.

Specify Program Outcome:

- Gain proficiency in writing and structuring HTML documents using elements, attributes, and the Document Object Model (DOM).
- Learn to style web pages effectively using CSS, including the implementation of selectors, combinatory, and media queries for responsive designs.
- Give hands on training to the students and make them acquainted with various
- Implement form validation using HTML5 attributes and JavaScript to ensure data integrity and enhance user experience.
- Create and manipulate lists, tables, and other complex UI elements programmatically Using JavaScript

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc FY **Subject**: Computer Science **Course Code**:OCS-103

Paper Title: Introduction to Data Structure

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	Definition of Data Structure, Elementary data organization, data structure operations, Algorithmic notations, Control structure.	Develop knowledge of data structures.
II	UNIT II	Introduction to Linked list, Representation of linked list in memory, Traversing, Searching in Unsorted linked list, Overflow and Underflow, Inserting at the beginning of list, deleting node following a given Node.	Solve problems using linear lists.
III	UNIT III	Stack: Introduction, Memory representation of Stack, Insert element in Stack i.e. PUSH operation, Delete element from Stack i.e. POP operation. Queue: Introduction,Memory Representation, Insert & Delete operation in Queue.	Solve problems using stack & queue.
IV	UNIT IV	Tree: Introduction, definition ofa Binary tree & its Memory representation, Traversing a Binary Tree, PREORDER, INORDER, POSTORDER Traversal, Threaded binary tree. Graph: Introduction, Memory Representation ofgraphs.	Solve problems using tree.

Specify Course Outcome:

1. To develop application using data structures.
2. Students develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching etc.

Specify Program Outcome:

- Fast Data Retrieval: Quick access to stored data.
- Optimized Memory Usage: Minimized memory consumption.
- Improved Performance: Enhanced algorithm efficiency.
- Scalability: Handling large datasets with ease.
- Reliable Data Storage: Ensuring data integrity.
- Database Management: Organizing and querying data.
- Data Structures
  1. Array: A fixed-size, homogeneous collection.
  2. Linked List: A dynamic, sequential collection.
  3. Stack: Last-In-First-Out (LIFO) data structure.
  4. Queue: First-In-First-Out (FIFO) data structure.
  5. Tree: Hierarchical data structure.
  6. Graph: Non-linear, connected data structure.
  7. Hash Table: Key-value mapping data structure.
- File Systems: Storing and retrieving files.
- Web Search Engines: Indexing and retrieving web pages.
- Social Media Platforms: Managing user data and connections.
- Compilers and Interpreters: Parsing and executing code.

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc FY **Subject**: Computer Science C**ourse Code**: OCS 104

Paper Title: Programming in C Language

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**UNIT I**	Introduction to C, Character set, C tokens, Constant and Variables, Data types, declaration of variables, assigning values to Variables, Input /Output Statement, all Operators and Structure of C program.	-Develop programs in c-programming -Examine how to compile, debug and executing C programs.
II	**UNIT II**	If Statement, If-Else statement, Nesting of If-Else statement, switch Statement, goto, Looping statements, while loop, do-While, for loop, nested loop.	-Develop programs using the basic elements like control statements, And Conditional Statement.
III	**UNIT III**	Introduction to Array, types of array declaration and initialization, introduction to function, recursion, standard library string handling functions: strlen(), strcpy(), strcmp(),strcat()., Storage Classes: auto, static, register, extern	-Enable effective usage of arrays, structures, functions and pointers.
IV	**UNIT IV**	Introduction to Function, Introduction to Structure and Union, Defining Structure and Accessing Structure members, Introduction to Concept of File Handling.	-Implement different Operations on a functions, structures, unions and files.

Specify Course Outcome:

1. Practical approach to understand the principles of creating an effective web page.
2. The course is designed to provide complete knowledge of C language to develop logics which will help them to create programs.

Specify Program Outcome:

- Real Time Applications implemented currently in the Industry Using Programming in C Language.
- Learns the basic computer language
- Ability to handle possible errors during program execution
- Develops the ability to analyze a problem, develop an algorithm to solve it.
- Develops the use of the C programming language to implement various algorithms, and develops the basic concepts and terminology of programming in general.
- Design and plan the logic of a Program.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: More A. D. **Department:** Computer Science

Program: BSc FY **Subject**: Computer Science **Course Code**:OCS-105

Paper Title: OCS-105(Lab)

Unit Number	Topics	Unit-wise Outcome
1	Body structure of HTML	Learn syntax of HTML tag & execute program.
2	List in HTML	
3	Linking HTML Pages	
4	Text Formatting in HTML	
5	Images in HTML	
6	Tables in HTML	
7	Frames in HTML	
8	Image map in HTML	
9	Forms in HTML	
10	Inserting sound in HTML	
11	Write a program in C for IF statement.	Design algorithm & draw flowchart & execute program.
12	Write a program in C for SWITCH statement.	
13	Write a program in C for GOTO statement.	
14	Write a program in C for LOOP statement.	
15	Write a program in C for array	
16	Write a program in C for recursion.	
17	Write a program in C for string functions.	
18	Write a program in C using functions.	
19	Write a program in C for structure and union.	
20	Write a program in C for array	

Specify Course Outcome:

1. To develop application using data structures.
2. Students develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching etc.

Specify Program Outcome:

- Create basic web pages using HTML
- Structure content using headings, paragraphs, lists
- Add images, links, and multimedia elements
- Build forms and tables
- Use HTML validation tools
- Design and build visually appealing web pages
- Create responsive web designs
- Implement accessibility features
- Integrate HTML with CSS and JavaScript
- Develop web applications using HTML frameworks
- Apply HTML knowledge to web development frameworks
- Understand web standards and best practices
- Develop problem-solving skills for web development
- Learn about web security and privacy

C Language Outcomes:

- Understand C syntax and data types
- Learn control structures (if/else, loops, switch)
- Familiarity with functions, pointers, and arrays
- Understand memory management
- Knowledge of C libraries (stdio, math)
- Write C programs using variables, operators
- Implement control structures and functions
- Use pointers and arrays for data manipulation
- Manage memory using dynamic allocation
- Debug C programs using print statements and debuggers
- Develop system software and embedded systems
- Create games and simulations
- Implement algorithms for problem-solving
- Build network applications and protocols
- Develop desktop applications and tools

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S **Department:** Computer Science

Program: BSc SY **Subject**: Computer Science **Course Code**: OCS 201

Paper Title: Operating System

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**UNIT I**	Introduction to Operating Systems, Computer- System Architecture, Operating-system Structure, Operating-System Operations, Process Management, Memory Management, Storage Management, Protection and Security, Distributed Systems,	Understand operating system. Different types of operating system.
II	**UNIT II**	Operating-System Services, User Operating-System Interface, System Calls, Types of System Calls, System Programs, Virtual Machines, Operating-System Generation, System Boot.	Understand functions of operating system.
III	**UNIT III**	Process Concept, Process Scheduling, Operations on Processes, Inter-process Communication, Examples of IPC Systems, Communication in Client- Server Systems, Overview of threads, Multithreading Models.	Understand Process management.
IV	**UNIT IV**	Swapping, Contiguous memory Allocation, Paging, Structure of the Page Table, Segmentation, virtual memory. File Concept, File-System Mounting, File-System Structure.	Understand Memory management and file management.

Specify Course Outcome:

1. Students will be able to the basic components of a computer Operating System.

2. Study different function of operating system.

Specify Program Outcome:

- Understand OS architecture (kernel, shell, hardware)
- Learn about process management (creation, scheduling, synchronization)
- Familiarity with memory management (virtual memory, paging, segmentation)
- To develop Knowledge of file systems (file organization, protection, sharing)
- Apply OS concepts to other areas (e.g., database systems, compiler design)
- Understand computer architecture and organization
- Develop problem-solving skills for system-level issues
- Learn about distributed systems and parallel processing
- Transfer OS knowledge to other operating systems (e.g., Windows, Linux, macOS)
- Design and implement efficient file systems
- Develop device drivers for hardware components
- Create secure and efficient network protocols

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc SY **Subject**: Computer Science C**ourse Code:** OCS 202

Paper Title: Object Oriented Programming Using C++

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Unit I**	Basic Concepts of OOP, Object Oriented Languages, Applications of OOP, Structure of C++ program, difference between top down and bottom up language,	- Implement the concepts of object oriented programming. -Assemble programs in c++
II	**Unit II**	Introduction, Tokens, Keywords, Identifiers & Constants, Basic Data Types, Variables Operators in C++ : , Decision Control & Loop Control Structures: If, If-else, Nested If, Else-if ladder, switch, goto statement, Break statement, while, do-while, for loop	-Develop programs using the basic elements like control statements, And Conditional Statement.
III	**Unit III**	Introduction to function, Function Prototyping, Call by Value & Call by reference, default arguments, Function Overloading, Library Functions	-Implement C++ programming function overloading and Library function.
IV	**Unit IV**	Introduction to Structure, Specifying a class, defining member functions, static Data members, static member function, Friend function, Introduction to Constructors, Parameterized Constructors, destructors. Introduction to inheritance	Write program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.

Specify Course Outcome:

1. Upon compilation of this course, students will able to do programming independently and will also be able to built small application,
2. Introduces the more advanced features of the *C++* language.

Specify Program Outcome:

- To understand how C++ improves C
- To learn OOPS concepts
- To learn how to design C++ classes for code reuse
- Understand tokens, expressions, and control structures
- Describe OOPs concepts
- Use functions and pointers in your C++ program
- Describe and use constructors and destructors

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc SY **Subject**: Computer Science C**ourse Code**:OCS 203

Paper Title: Laboratory Course Work (LCW)-II (OS and C++)

Unit Number	Topics	Unit-wise Outcome
1.	Program in C++ using decision control structures	**Write Algorithm and Design Flowchart**
2.	Program in C++ using looping statements	
3.	Program in C++ using Switch Statement	
4.	Program in C++ using functions	
5.	Program in C++ using a function with default arguments	
6.	Program in C++ using a class and member function defined outside the class	
7.	Program in C++ using Multiple Constructors in a class	
8.	Program in C++ using Object as function arguments	
9.	Program in C++ to demonstrate Different types of Inheritance	
10.	Program in C++ to demonstrate Multiple Inheritance	

Specify Course Outcome:		
11.	Program in C++ to demonstrate Single Inheritance	
12.	Program in C++ using Static Data Members	
13.	Program in C++ to Demonstrate Use of File	
14.	Introduction to Linux	
15.	Linux Installation;	**Analyze steps in installation of Linux**
16.	Simple Linux Commands:	**Execute Linux command**
17.	Communication Commands:	**Execute Linux commands**
18.	Administration Commands:	**Execute Linux commands**
19.	Shell Scripting;	**Study shell script**
20.	Shell Programs.	**Execute shell program**

Specify Course Outcome:

- Student will be able to understand the basic components of a Linux operating system, and the interactions among the various components.
- Further, they will be able to independently program in C++ .

Specify Program Outcome:

- To learn fundamentals of Operating System.
- To understand the structure and organization of the file system.
- To learn mechanism of OS.
- To understand how C++ improves C
- To learn OOPS concepts
- To learn how to design C++ classes for code reuse
- To understand the services provided by and the design of an operating system
- To understand the structure and organization of the file system.
- To develop an understanding of different components of computer networks, various protocols, modern technologies and their applications.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S **Department:** Computer Science

Program: BSc SY **Subject**: Computer Science **Course Code**:OCS 204

Paper Title: Skill Enhancement Course-I (Programming in SCILAB-I)

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**UNIT I**	Why scilab, Capabilities of Scilab package, benefits of shifting to scilab.	Analysis need of SCILAB
II	**UNIT II**	Installation and tuning.	Installation of SCILAB.
III	**UNIT III**	Getting started, Expressions, Show mathematical expressions with numbers, Variables, Diary command, Define symbolic constants, Basic functions, suppressing output(;), help, etc.	Study mathematical expression in SCILAB.
IV	**UNIT IV**	Vector operation, Define vector, Calculate length of a vector, Perform mathematical operations on Vectors such as addition, subtraction and multiplication, Define a matrix, Calculate size of a matrix, Perform mathematical operations on Matrices such as addition, subtraction and multiplication.	Study Vector expression in SCILAB. Study Matrix operation in SCILAB.

Specify Course Outcome:

Students will be able to understand the main features of the SCILAB program development environment, to implement simple mathematical functions/equations in numerical computing environment such as SCILAB

Specify Program Outcome:

- Understand Scilab syntax and data types
- Familiarity with numerical computations (algebra, calculus, statistics)
- Knowledge of graphical capabilities (2D/3D plotting, visualization)
- Understand signal processing and image processing techniques
- Learn about mathematical and basic functions
- Familiarity with optimization techniques (linear, nonlinear)
- Understand all vector and matrix operations.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc SY **Subject**: Computer Science **Course Code**: OCS 205

Paper Title: Computer Network

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Unit I**	Computer Network Definition & Applications, Data Transmission Modes, Protocol Hierarchies, Design issues for layers, Connection Oriented & Connectionless services. Service Primitives. Network Models – OSI/ISO Reference Model & TCP/IP Model.	Study basic structure of computer network.
II	**Unit II**	Network Topologies, Network Devices - NIC Cards, Hub, Switch, Bridges, Wireless access points, Router, gateways, Modems, Repeaters, Types of Networks	Study different devices used in network.
III	**Unit III**	Magnetic Media, Twisted pair, Co-axial cable , fiber optics , radio transmission, Wireless Transmission, Bluetooth. Structure of telephone system, Transmission & Switching, Trunks & Multiplexing, Email Architecture,	Study different cables in network. Study telephone system.
IV	**Unit IV**	Network Protocols, Web server, Browsers, Domain Name System, introduction to IP address & IP protocol, Introduction to Wi-Fi & 4G technologies. Introduction to Security & Cryptography, Firewall,	Study protocols in network. Study different technique in security.

Specify Course Outcome:

- Study network devices, structure of network.
- Study security & protocols of operating system.
- Students would be able to choose, escalate and establish a computer network

Specify Program Outcome:

- Understand network fundamentals (TCP/IP, OSI model)
- Learn about network protocols (HTTP, FTP, DNS)
- Familiarity with network architectures (LAN, WAN, Wi-Fi)
- Knowledge of network devices (routers, switches, firewalls)
- Understand network security threats and countermeasures
- Learn about network management and troubleshooting
- Familiarity with cloud computing and virtualization
- Configure and manage network devices
- Implement network protocols and services
- Troubleshoot network connectivity issues
- Design and implement network architectures
- Conduct network vulnerability assessments
- Implement network security measures (firewalls, VPNs)
- Manage network traffic and optimize performance

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc SY **Subject**: Computer Science **Course Code**: 206

Paper Title: Programming in JAVA

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Unit I**	Java Features, How java differs From C and C++, Java and Internet. Java & WWW, Web Browsers, Java support systems, JVM, Java program structure.	-Analyze and use Java in a variety of applications.
II	**Unit II**	Java Tokens , Constants, Variables, Data Types, Declaration of variable, Giving Values to variables, Scope of Variables, Symbolic Constants, Command line argument, simple Java programs.	-Implement object-oriented programming in Java.
III	**Unit III**	Introduction &Defining a class, Adding variables, Adding Methods, Creating Objects, Accessing Class Members, Constructors. Method Overloading, Static Members, Inheritance, Extending a class, Overriding Method, Final variable and Methods.	- Write a program for Class and object, Constructor, inheritance programs and Exception handling
IV	**Unit IV**	Introduction, Defining Interface, Extending Interface, Implementing Interface, Accessing Interface Variables Introduction to Arrays, Introduction to Java API package	- Write and debug a software application developed using the Java programming language.

Specify Course Outcome:

- On completion of the course the student would be able to use Java integrated development environment to write, compile, run, and test simple object-oriented Java programs.
- Further, they would be able to make elementary modifications to Java programs that solve real-world problems.

Specify Program Outcome:

- To learn why Java is useful for the design of desktop and web applications.
- To learn how to implement object-oriented designs with Java.
- To identify Java language components and how they work together in applications.
- The course is designed to build practical skills in the creation and publication of digital technologies.

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc SY **Subject**: Computer Science **Course Code**: OCS 207

Paper Title: Laboratory Course Work (LCW)-III (CN & Java)

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	Network Setup		**Create the setup of network**
2	Configuration IP Address		**Analyze the configuration of IP Address**
3	Data Transmission Modes		**Manage modes of transmission**
4	Implement caser cipher algorithm		**Write Algorithm and Design Flowchart**
5	Implement Mono alphabetic cipher		
6	Simple JAVA Programs		
7	Program in JAVA using Conditional statement		
8	JAVA Programs using control Structures		
9	Program in JAVA using Two classes		
10	Program in JAVA to Demonstrate Command Line Arguments		

11	Program in JAVA to demonstrate Method Overloading		
12	Program in JAVA using Inheritance		
13	Program in JAVA to Demonstrate Method Overriding		
14	Program in JAVA using Interface		
15	Program in JAVA using an Array		
16	Program in JAVA to demonstrate String Methods		
17	Program in JAVA using user Package		
18	Program in JAVA using system package		
19	Program in JAVA using constructors		
20	Program in JAVA using Nesting of Methods		

Specify Course Outcome:

- Students will gain expertise in some specific areas of networking such as the design and maintenance of individual networks.
- On completion of the course the student would be able to, use an integrated development environment to write, compile, run, and test simple object-oriented Java programs

Specify Program Outcome:

- To learn why Java is useful for the design of desktop and web applications.
- To learn how to implement object-oriented designs with Java.
- To identify Java language components and how they work together in applications.

- The course is designed to build practical skills in the creation and publication of digital technologies.
- To develop an understanding of different components of computer networks, various protocols, modern technologies and their applications.
- To learn why Java is useful for the design of desktop and web applications.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc SY **Subject**: Computer Science **Course Code**:OCS 208

Paper Title: Skill Enhancement Course-II (Digital Media Concept)

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Unit I**	Presentation software, Introduction to power point, creating presentation with power-point, Introduction to Flash , Creating Presentation with flash.	Study different presentation software's.
II	**Unit II**	Blogging, Fundaments of blog, Common examples of Blog, Create a blog with multimedia Content.	Create blog.
III	**Unit III**	Digital photography, Basic of digital photography, Camera and shooting, Digital image editing, Digital image management.	Use of digital camera.
IV	**Unit IV**	Podcast, Fundaments of Podcast, Audio recording and editing , Publishing and hosting Podcast, Social Mediatools, Writing content for the web, Search engine optimization	Study podcast. Promote blog.

Specify Course Outcome:

- Student will be able to use essential skills for digital media.

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Specify Program Outcome:

- Understand digital media concepts (image, video, audio, text)
- Familiarity with digital media formats (JPEG, PNG, MP4, WAV)
- Knowledge of digital media software (Adobe Creative Cloud, Sketch)
- Understand digital media design principles (color theory, typography)
- Learn about digital media distribution channels (social media, websites)
- Proficiency in graphic design software (Photoshop, Illustrator)
- To understand Video editing skills (Premiere Pro, Final Cut Pro)
- To understand Audio editing skills (Audition, Logic Pro)
- Develop Web development skills (HTML, CSS, JavaScript)
- Understand Familiarity with digital media tools (After Effects, Blender)

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc TY **Subject**: Computer Science **Course Code**: OCS 301

Paper Title: Software Engineering

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**The Nature of Software & Software Engineering**	The Nature of Software, The Changing Nature of Software, Defining the Discipline, Software engineering process, Software engineering practice, Software Myths	-Examine the basic concepts of software engineering
II	**Software Process Structure & Models and Agile Development**	A Generic process model, defining a framework activity, Process patterns, Process assessment & improvement, Prescriptive process models, Personal & team process models	Apply the software engineering models in developing software applications.
III	**Understanding Requirements & Design Concepts**	Requirement Engineering, Building the analysis model, Requirement Analysis, Design within the context of software engineering, the design process, Software Architecture, Designing Class based Components	-Analyze the requirements for different projects
IV	**Web App & Mobile App Design**	Web App Design Quality, Design Goals, A Design Pyramid for Web Apps, Web App Interface Design, The Challenges in Mob. App design, Developing Mobile Apps, Mobile App Design-Best Practices	-Implement process for designing mobile apps.

Specify Course Outcome:

- Confidence of becoming a Software developer in order to get placement as well as
- In research activities and Knowledge of Software.
- Software engineering is art of software designing.
- It aims to prepare detailed plans and designs as per customer's demands, carry out testing, develop intuitive user interfaces, and integrate all these activities into a system.

Specify Program Outcome:

- Understand Software Engineering Process.
- Understand Requirements and components of Software Engineering.
- Understand software design and software testing fundamentals
- To learn Graphical User Interface Language.
- How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment
- An ability to work in one or more significant application domains
- Work as an individual and as part of a multidisciplinary team to develop and deliver quality software
- Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle
- Demonstrate an ability to use the techniques and tools necessary for engineering practice

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc TY **Subject**: Computer Science **Course Code**: OCS 302

Paper Title: Programming in VB[A]

Unit Number	**Unit Name**	**Topics**	**Unit-wise Outcome**
I	**Getting Started with VB**	The IDE, The Elements of user interface, Designing user interface, Programming an Application Visual Development and Event Driven Programming.	Study basic parts of IDE.
II	**Visual Basic The language**	Variable, Constants, operators, datatypes, arrays, collections, Procedures, control flow & loop statements.	Study VB language.
III	**Working with forms**	Form types, Appearance of forms, Form properties, Designing menu structure, Building dynamic forms at run time, Introduction to MDI forms.	Study forms.
IV	**Basic Active X controls**	Command button, control-properties, Text Box control-properties, List Box & Combo Box control - properties, combo Box control-properties, Scroll Bar control-properties, Slider control properties, Understanding Visual data manager.	Study controls of VB.

Specify Course Outcome:

- Confidence of becoming a Software developer in order to get placement as well as in research activities.
- Knowledge of programming
- To learn Graphical User Interface Language.
- To develop an application using GUI Language.
- Implement VB programs to solve simple problems

Specify Program Outcome:

- Understand VB6 syntax and data types
- Familiarity with VB6 controls and components
- Knowledge of event-driven programming
- Understand object-oriented programming (OOP) concepts
- Learn about database connectivity (ADO, DAO)
- Develop Windows desktop applications
- Create graphical user interfaces (GUIs)
- Implement file input/output operations
- Use VB6 built-in functions and APIs
- Debug and troubleshoot VB6 code.
- Develop Windows desktop applications
- Database design and implementation
- Design and develop user-friendly interfaces
- Implement data validation and error handling
- Use VB6 tools (Visual Data Manager, Query Builder)
- Create setup and installation packages

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc TY **Subject**: Computer Science **Course Code:**OCS 303

Paper Title: Skill Enhancement Course-III (System Security)

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**UNIT-I**	General overview and definitions Security models and policy issues	-Implement basics of computer security and its terminology
II	**UNIT-II**	Introduction to cryptography and classical cryptosystem Authentication protocols and Key Management IPsec, VPNs, E-commerce issues	-Manage various Attacks, Threats and Vulnerabilities in the system.
III	**UNIT-III**	Design principles Security Mechanisms Auditing Systems Risk analysis System verification and evaluation	-Design algorithms for Encryption Decryption.

Specify Course Outcome:

1. -course covers fundamental issues and first principles of security and information assurance.
2. -The course will look at the security policies, models and mechanisms related to confidentiality, integrity, authentication, identification, and availability issues related to information and information systems.

Specify Program Outcome:

- Understand software design and software testing fundamentals

- Detect attack methodology and combat hackers from intrusion or other suspicious attempts at connection to gain unauthorized access to a computer and its resources.
- Protect data and respond to threats that occur over the Internet
- Design and implement risk analysis, security policies, and damage assessment.
- Provide contingency operations that include administrative planning process for incident response, disaster recovery, and business continuity planning within information security.

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc TY **Subject**: Computer Science **Course Code**: OCS 304

Paper Title: Software Testing

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Software Quality Assurance**	Software Quality, Formal Technical Reviews, Elements of Software Quality Assurance, SQA Processes and Product Characteristics, SQA Tasks, Goals, and Metrics, The ISO 9000 Quality Standards.	-Analyze all standards for software testing
II	**Software Testing Strategies**	A Strategic Approach to Software Testing, Strategic Issues Test Strategies for Conventional Software, Test Strategies for WebApps& Mobile Apps, Validation Testing, System Testing,	-implement testing strategies for mobile and webapp.
III	**Internet**	Software Testing Fundamentals, Internal and External Views of Testing, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing,	-Implement black and white box testing
IV	**Testing Web Applications & Mobile Applications**	Testing Concepts for WebApps, The Web Testing Process—An Overview, Testing Guidelines for Mobile Apps, The Testing Strategies of mobile apps, Considering the Spectrum of User Interaction.	-Implementing testing for user interface.

Specify Course Outcome:

-Set the basic path to students towards becoming a Software Professional.

Specify Program Outcome:

- Understand and describe the basic concepts of functional (black box) software testing.
- Identify a number of test styles and techniques and assess their usefulness in your context.
- Understand the basic application of techniques used to identify useful ideas for tests.
- Help determine the mission and communicate the status of your testing with the rest of your project team.
- Characterize a good bug report, peer-review the reports of your colleagues, and improve your own report writing.
- Understand where key testing concepts apply within the context of unified processes.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc TY **Subject**: Computer Science **Course Code**: OCS 305

Paper Title: Relational Database Management Systems

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**Introduction**	Introduction to DBMS, Applications of DBMS, Data Models, Database Architecture, Database Users & Administrators, Entity, Attributes & Entity Set, Database Languages, DDL,DML,DCL.	Study basic parts of DBMS.
II	**Relational Algebra and Calculus**	Introduction to Selection, Projection, Union, and Joins, introduction to SQL, Basic SQL Query and Examples of SQL Queries: select, where, from, Introduction to views, Aggregate Operators Group by & Order by Clause.	Study queries of SQL.
II	**Integrity Constraints**	Introduction, Domain Constraint, Primary Key, Unique Key, Foreign Key.	Study keys.
IV	**Introduction to PL/SQL**	Introduction, Architecture of PL/SQL, Data types, operators, Decision making and looping statements, Simple PL/SQL Programs, Introduction to Triggers.	Study of PL/SQL

Specify Course Outcome:

1. To learn Relational Database Management system and database languages.
2. To learn Relational Algebra and Calculus.
3. To study Integrity Constraints and PL/SQL
4. To develop an application using PL/SQL.

Specify Program Outcome:

- Understand RDBMS concepts (tables, indexes, views)
- Familiarity with database design principles (normalization, de-normalization)
- Knowledge of SQL (Structured Query Language)
- Understand data modeling and entity-relationship diagrams
- Learn about database security and access control

- Design and implement relational databases
- Write SQL queries (SELECT, INSERT, UPDATE, DELETE)
- Create database indexes and optimize performance
- Use database management tools (DBMS, SQL Server Management Studio)
- Implement data backup and recovery strategies SQL programming and querying
- Data modeling and normalization
- Database administration and management
- Data backup and recovery

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc TY **Subject**: Computer Science **Course Code**: OCS 306

Paper Title: Skill Enhancement Course-IV (**Website Development**)

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	**UNIT-I**	Website Designing Website Development	-Implement HTML tags for designing static pages and separate design from content using Cascading Style Sheet.
II	**UNIT-II**	Study of sites.google.com for Web development Accessing Google sites	-Analyze source code for Google site and know basic structure of Google web site.
III	**UNIT-III**	Creating a Google Site Adding content	-Implement all tags to place information on webpage
IV	**UNIT-IV**	Adding pages Customizing the design Sharing a Google Site Publishing a Google Site	-Develop interactive web applications through coding using HTML, CSS and XML.

Specify Course Outcome:

1. Simple and impressive design techniques, from basics till advanced to focus on goal oriented and user centric designs.
2. How to and where to start research, planning for website & actually build excellent web sites.
3. To create web elements like buttons, banners & Bars and of course complete UI designs.
4. Forms and validations for your website. Setting up page layout, color schemes, contract, and typography in the designs.

Specify Program Outcome:

- Structure and implement CSS, JavaScript, React & HTML
- Implement intermediate and advanced level web development practices
- Develop and fully functional website and deploy a web server
- Architect solution to programming problems by combining visual components
- Develop fully working applications & website that can be used on cross platforms

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Waghmare A.S. **Department:** Computer Science

Program: BSc TY **Subject**: Computer Science **Course Code**:OCS 307

Paper Title: Practical Based on theory papers XIII & XV

Unit Number	Topics	Unit-wise Outcome
1	Write a program in VB for arithmetic operation.	Study properties of controls of vb& implement it.
2	Write a program in VB for Check Box.	
3	Write a program in VB for Option Button	
4	Write a program in VB for Combo Box & List Box.	
5	Write a program in VB for Picture Box.	
6	Write a program in VB for System security.	
7	Write a program in VB for Scroll Bar.	
8	Write a program in VB for creating mark sheet.	
9	Write a program in VB for Database.	
10	Write a program in VB for Menu Editor.	
11	Create a table in SQL & execute DDL command.	Study syntax of query & execute it.
12	Create a table in SQL & execute DML command.	
13	Create a table in SQL & execute DQL command.	
14	Create a table in SQL & execute SELECT clauses.	
15	Create a table in SQL & execute TCL command.	
16	Create a table in SQL & execute DCL command	
17	Aggregate Functions in SQL.	
18	Views in SQL.	
19	Joining Command in SQL..	
20	Relational Algebra.	

Specify Course Outcome:

1. To learn Graphical User Interface Language.
2. To develop an application using GUI Language.
3. Implement VB programs to solve simple problems
4 To learn Relational Database Management system and database languages.
5 To learn Relational Algebra and Calculus.
6 To study Integrity Constraints and PL/SQL
7 To develop an application using PL/SQL.

Specify Program Outcome:

- Design and develop user-friendly interfaces
- Implement data validation and error handling
- Use VB6 tools (Visual Data Manager, Query Builder)
- Create setup and installation packages
- Deploy VB6 applications Understand VB6 syntax and data types
- Familiarity with VB6 controls and components
- Knowledge of event-driven programming
- Understand object-oriented programming (OOP) concepts
- Learn about database connectivity (ADO, DAO)
- Develop Windows desktop applications
- Create graphical user interfaces (GUIs)
- Implement file input/output operations
- Use VB6 built-in functions and APIs
- Debug and troubleshoot VB6 code.
- Database design and implementation
- SQL programming and querying
- Data modeling and normalization
- Database administration and management
- Data backup and recovery
- Design and implement relational databases
- Write SQL queries (SELECT, INSERT, UPDATE, DELETE)
- Create database indexes and optimize performance
- Use database management tools (DBMS, SQL Server Management Studio)
- Implement data backup and recovery strategies

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Pro-forma for program and course outcomes (2.6.1)

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

Program: BSc TY **Subject**: Computer Science **Course Code**: OCS 308

Paper Title: Laboratory Course Work-Project Work

Unit Number	Unit Name	Topics	Unit-wise Outcome
		Project Development	-Identify and formulate the problem -Analyze the problem and collect necessary data. -Design and develop the project using appropriate software by applying the programming skills. -Implement, evaluate and generate reports.

Specify Course Outcome:

1. Give hands on training to the students and make them acquainted with various Real time Applications implemented currently in the Industry.
2. To understand and select the task based on their core skills.
3. To get the knowledge about analytical skill for solving the selected task.
4. To get confidence for implementing the task and solving the real time problems

Specify Program Outcome:

- Understand Software Engineering Process.
- Understand Requirements and components of Software Engineering.
- Understand software design and software testing fundamentals
- Course covers fundamental issues and first principles of security and information assurance.
- define what a project is
- understand the importance of risk
- define the questions a decision maker needs to ask
- list the main activities and tasks of a project manager

- Consider phased development, prototype approaches or agile methods.
- Define what a project is
- Use a variety of knowledge-gathering and idea-generating techniques to develop objectives for action
- Use Pareto analysis and cause and effect diagrams to explore problem areas
- Generate simple matrix diagrams to relate objectives to strategies
- Name and describe the chief roles various people can assume relating to proposals and projects
- Relate all these roles to the process of organizational planning
- Explain different views of quality and show that a structured approach to planning improves quality.

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