



**Anekant Education Society's**  
**Tuljaram Chaturchand College, Baramati**  
*(Empowered Autonomous)*

**Four Year Degree Program in BBA (CA)**  
**(Faculty of Commerce and Management)**

**CBCS Syllabus**

**SYBBA (C.A.) Semester -IV**

**For Department of BBA (Computer Application)**  
**Tuljaram Chaturchand College, Baramati**

**Choice Based Credit System Syllabus (2023 Pattern)**  
**(As Per NEP 2020)**

**To be implemented from Academic Year 2024-2025**

**Title of the Programme: S.Y.BBA (Computer Application)****Preamble**

AES's Tuljaram Chaturchand College has made the decision to change the syllabus of across various faculties from June, 2023 by incorporating the guidelines and provisions outlined in the National Education Policy (NEP), 2020. The NEP envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning. The NEP introduces holistic and multidisciplinary education that would help to develop intellectual, scientific, social, physical, emotional, ethical and moral capacities of the students. The NEP 2020 envisages flexible curricular structures and learning based outcome approach for the development of the students. By establishing a nationally accepted and internationally comparable credit structure and courses framework, the NEP 2020 aims to promote educational excellence, facilitate seamless academic mobility, and enhance the global competitiveness of Indian students. It fosters a system where educational achievements can be recognized and valued not only within the country but also in the international arena, expanding opportunities and opening doors for students to pursue their aspirations on a global scale.

In response to the rapid advancements in science and technology and the evolving approaches in various domains of BBA (Computer Application) and related subjects, the Board of Studies in BBA (Computer Application) at Tuljaram Chaturchand College, Baramati - Pune, has developed the curriculum for the fourth semester of S.Y. BBA (Computer Application), which goes beyond traditional academic boundaries. The syllabus is aligned with the NEP 2020 guidelines to ensure that students receive an education that prepares them for the challenges and opportunities of the 21st century. This syllabus has been designed under the framework of the Choice Based Credit System (CBCS), taking into consideration the guidelines set forth by the National Education Policy (NEP) 2020, LOCF (UGC), NCrF, NHEQF, Prof. R.D. Kulkarni's Report, Government of Maharashtra's General Resolution dated 20th April and 16th May 2023, and the Circular issued by SPPU, Pune on 31st May 2023.

BBA (Computer Application) is Undergraduate Degree Program with Computer Applications and Management Subjects. This program provides sound knowledge of theory and practical's. The different subjects helps the students to design, develop and implement software Applications, to learn emerging computer technologies and produce skilled human resource to face the professional challenges.

Overall, revising the BBA (Computer Application) syllabus in accordance with the NEP 2020 ensures that students receive an education that is relevant, comprehensive, and prepares them to navigate the dynamic and interconnected world of today. It equips them with the knowledge, skills, and competencies needed to contribute meaningfully to society and pursue their academic and professional goals in a rapidly changing global landscape.

**Programme Outcome For NEP 2020 (With Effect from June 2023-24)****Commerce and Management (Under Graduate Programme)**

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**PO1: A Fundamental Knowledge and Coherent Understanding:**

Student should be able to acquire broad multidisciplinary knowledge in different educational domains and their links to various field of study like Banking, Accounting, Management, Logistics, Marketing, Human Resource Management and Computer Science and Applications.

**PO2: Procedural Knowledge for Skill Enhancement:**

Students should be able to acquired complete procedural knowledge for deep understanding of every subject and enhancing the subject skills.

**PO3: Critical Thinking and Problem-Solving Skills:**

Students should be able to solve all types of issues in both known and unknown circumstances, as well as apply what they have learned to real-life situations. Students will be able to conduct investigation on complex problem solving through the design of experiments, analysis and interpretation of data to arrive at valid conclusion.

**PO4: Communication Skills:**

With the help of various languages students will enhance the communication skills which will improve the personality of the students with the help of interpersonal and intrapersonal communication skills. Students should be able to construct logical arguments using correct technical language related to a field of learning. Also Students should be able to communicate effectively, analyze the concepts and participate in healthy arguments and portray skill in communication and in writing. Possess skills related with banking and other business.

**PO5: Analytical Reasoning Skills:**

The students should be able to demonstrate the capability to evaluate the reliability and relevance of situation and select the proper course of action. Strengthen analytical skills in business operations and analyze the positive aspects and limitations of conducting trade and trade-related activities according to their extensive knowledge.

**PO6: Innovation, Employability and Entrepreneurial Skills:**

The students should be able to identify opportunities and pursue those opportunities to create value and wealth for the betterment of the individual and society at large as well as be

suitable for employment, as an entrepreneur focused, and serve as a role model for ethical and responsible economic professionals.

**PO7: Multidisciplinary Competence:**

The student should be able to demonstrate the acquisition of knowledge of the values and beliefs of multiple disciplines. The student should be able to perceive knowledge as an environmental friendly, extensive, interconnected, and interconnected faculty of consciousness that encourages design, interpersonal, and empathetic and understanding environmental challenges across disciplines.

**PO8: Value Inculcation through Community Engagement:**

The students should be able to implement the acquired knowledge and attitude to embrace constitutional, humanistic, ethical, and moral values in life. Students should be able to participate in community-engaged activities for promoting the well being of the society.

**PO9: Traditional Knowledge into Modern Application:**

Students should be able to acquire and apply traditional knowledge system in to modern and professional domain.

**PO10: Design and Development of System:**

Students should be able to design and develop efficient solutions for complex real world computing problems and design system components or processes that meet the specifies needs with appropriate consideration for public health and safety and the cultural, social and environmental considerations.

**PO11: Ethical and Social Responsibility:**

Students should be able to acquire knowledge of ethics and ethical standards and an ability to apply these with a sense of responsibility within the workplace and community. Understand and accept the moral aspects, accountability, and value system for a nation and society. Students should be able to demonstrate academic accountability, intellectual authenticity, and personal integrity. Students also acquire abilities to comprehend and implement professional ethics.

**PO12: Research-Related skills:**

The students should be able to acquire the understanding of basic research process, methodology and ethics in practicing personal and social research work, regardless of the field of study.

**PO13: Teamwork:**

The students should be able to work constructively, cooperatively, effectively and respectfully as part of a team.

**PO14: Area Specific Expertise:**

The students should be able to apply various subjective concepts, theories and model in the area of Accounting, Taxation, Marketing, Finance and Human Resource Management, Computer after better understanding of the subject and its contents.

**PO15: Environmental Awareness:**

The students should be able to manage environmental- related risk from an organization's operation as well as identify environmental hazards affecting air, water and soil quality. The students should be able to manage and controls to reduce and eliminate environmental risk.

## Programme Specific Outcomes (PSOs)

- PSO1. Knowledge:** To understand and apply the fundamental principles, concepts, and methods in diverse areas of computer science, computer applications, management, mathematics, statistics, etc.
- PSO2. Problem Analysis:** Identify, analyze and formulate complex real-life computing problems. Attain substantiated conclusions to solve the problems using fundamental principles of computer science and application domains by using various tools and emerging technologies.
- PSO3. Design and Development:** Design and develop efficient solutions for complex real-world computing problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and the cultural, societal, and environmental considerations.
- PSO4. Conduct investigations of complex problems:** Ability to research, analyze and Investigate complex computing problems through the design of experiments, analysis, and interpretation of data, and synthesis of the information to arrive at valid conclusions.
- PSO5. Modern Tool Usage:** Create, identify and apply appropriate techniques, skills, and modern computing tools to computing activities.
- PSO6. Ethics and Social Responsibility:** Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.
- PSO7. Individual and Team Work:** Ability to work effectively as an individual, and as a member or leader as per need in, multidisciplinary teams.
- PSO8. Life-Long Learning:** Recognize the need and have the ability to engage in Independent continuous reflective learning in the context of technological advancement.
- PSO9. Project Management:** Understand and apply computing, management principles to manage projects.
- PSO10. Communication:** Able to use interpersonal skills and communicate effectively with the professionals and with society to convey technical information effectively and accurately and able to comprehend and write effective reports, design documentation, and make effective presentations.
- PSO11. Innovation, employability, and Entrepreneurial skills:** Identify opportunities, and pursue those opportunities to create value and wealth for the betterment of the individual and society at large.

### Credit Distribution Structure for S.Y.BBA (Computer Applications)-2023-2024

Level	Semester	Major		Minor	OE	VSC, SEC, (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC, RP	Cum. Cr/Sem	Degree/Cum.Cr.
		Mandatory	Electives							
4.5	III	BCA-201-MJM: Java Programming (2 credits)	—	BCA-211-MN: Computer Literacy (2 credits)	BCA-216-OE: Internet Skills & Applications (2 credits)	BCA-221-VSC: Software Testing & Automation (2 credits)	MAR-231-AEC : Marathi, HIN-231-AEC: Hindi, SAN-231-AEC : Sanskrit (2 credit)	CC1 (2 credit)	24	UG Certificate 44 credits
		BCA-202-MJM: Web Technologies (2 credits)		BCA-212-MN: Computer Literacy Lab (2 credits)			GEN-245-IKS: Generic Indian Innovations in Computer and Technology (2 credits)	BCA-235-FP: Field Project (2 credit)		
		BCA-203-MJM: Software Engineering (2 credits)								
		BCA-204-MJM: Practical I (2 credits)								
	IV	BCA-251-MJM: Advanced Java (2 credits)		BCA-261-MN: Web Designing (2 credits)	BCA-266-OE: Internet Skills & Applications Lab (2 credits)	BCA-276-SEC Automation Testing Lab (2 credits)	MAR-281-AEC :Marathi, HIN-281-AEC: Hindi,	CC2 (2 credit)	22	
							BCA-285-CEP:			



	BCA-252- MJM: Advanced PHP (2 credits)		BCA-262- MN: Web Designing Lab (2 credits)			SAN-281-AEC :Sanskrit (2 credit)	Communi- ty Engagem- ent Project (2 credit)		
	BCA-253- MJM: Operating System Concepts								
	BCA-254- MJM: Practical II (2 credits)								
Cum Cr.	16	--	8	4	4	6	8	46	

### Course Structure for S.Y.BBA (C.A.) (2023 Pattern)

Sem	Course Type	Course Code	Course Title	Theory / Practical	Credits
<b>III</b>	Major Mandatory	BCA-201-MJM	Java Programming	Theory	02
	Major Mandatory	BCA-202-MJM	Web Technologies	Theory	02
	Major Mandatory	BCA-203-MJM	Software Engineering	Theory	02
	Major Mandatory	BCA-204-MJM	Practical I	Practical	02
	Minor	BCA-211-MN	Computer Literacy	Theory	02
	Minor	BCA-212-MN	Computer Literacy Lab	Practical	02
	Open Elective (OE)	BCA-216-OE	Internet Skills & Applications	Theory	02
	Vocational Skill Course (VSC)	BCA-221-VSC	Software Testing & Automation	Theory	02
	Ability Enhancement Course (AEC)	MAR-231-AEC	भाषिक उपयोजन व लेखन कौशल्ये	Theory	02
		HIN-231-AEC	हिंदी भाषा कौशल		
		SAN-231-AEC	प्राथमिक संभाषण कौशल्यम्		
	Co-curricular Course (CC)	NSS-239-CC	NSS	Theory	02
		NCC-239-CC	NCC		
PES-239-CC		Physical Education and Sports			
YOG-239-CC		Yoga			
CUL-239-CC		Cultural Activity			
Field Project (FP)	BCA-235- FP	Field Project	Practical	02	
Generic IKS Course (IKS)	GEN-245-IKS	Generic IKS	Theory	02	
<b>Total Credits Semester-III</b>					<b>24</b>
<b>IV</b>	Major Mandatory	BCA-251-MJM	Advanced Java	Theory	02
	Major Mandatory	BCA-252-MJM	Advanced PHP	Theory	02
	Major Mandatory	BCA-253-MJM	Operating System Concepts	Theory	02
	Major Mandatory	BCA-254-MJM	Practical II	Practical	02
	Minor	BCA-261-MN	Web Designing	Theory	02
	Minor	BCA-262-MN	Web Designing Lab	Practical	02
	Open Elective (OE)	BCA-266-OE	Internet Skills & Applications Lab	Practical	02
	Skill Enhancement Course (SEC)	BCA-276-SEC	Automation Testing Lab	Practical	02

Ability Enhancement Course (AEC)	MAR-281-AEC	लेखन निर्मिती व परीक्षण कौशल्ये	Theory	02
	HIN-281-AEC	हिंदी भाषा : संप्रेषण कौशल		
	SAN-281-AEC	प्रगत संभाषण कौशल्यम्		
Co-curricular Course (CC)	NSS-289-CC	NSS	Theory	02
	NCC-289-CC	NCC		
	PES-289-CC	Physical Education and Sports		
	YOG-289-CC	Yoga		
	CUL-289-CC	Cultural Activity		
Community Engagement Project (CEP)	BCA-285- CEP	Community Engagement Project	Practical	02
<b>Total Credits Semester-IV</b>				<b>22</b>
<b>Cumulative Credits Semester III + Semester IV</b>				<b>46</b>

**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Major Mandatory (Theory)
<b>Course Code</b>	: BCA-251-MJM
<b>Course Title</b>	: Advanced Java
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 30

**Course Objectives:**

1. To learn the advanced concepts of Java Programming.
2. To learn to design and develop web applications.
3. To understand how to use programming in day-to-day applications.
4. To understand network programming.
5. Enhance problem-solving skills and the ability to develop efficient, scalable, and secure Java applications.
6. To develop web applications using Servlets and JSP (Java Server Pages)
7. To gain a deep understanding of advanced Java programming concepts such as multithreading, exception handling, and file I/O.

**Course Outcomes:****By the end of the course, students will be able to:**

- CO1.** Learn to access database using Java Data Base Connectivity in Java programs.
- CO2.** Develop multithreaded application with synchronization.
- CO3.** Explore and understand Java Server Pages.
- CO4.** Develop dynamic web applications using Java Servlets, including handling HTTP requests and responses.
- CO5.** Use JSP to create dynamic and interactive web pages, integrate Java code with HTML, and manage server-side logic.
- CO6.** Develop and utilize client/server applications and TCP/IP socket programming.
- CO7.** Create, manage, and control multiple threads in Java applications to enhance Performance and responsiveness.

Topics and Learning Points	Teaching Hours
<b>Unit 1: JDBC</b> 1.1 The Design of JDBC 1.2 Basic JDBC Program Concept 1.3 Drivers 1.4 Architecture of JDBC 1.5 Making the Connection, Statement, Result Set, Prepared Statement, Callable Statement 1.6 Executing SQL Commands 1.7 Executing Queries	<b>(08L)</b>
<b>Unit 2: Multithreading</b> 2.1 Threading Basics 2.2 Life Cycle of a Thread 2.3 Creating Threads 2.4 Priorities and Synchronization 2.5 Inter Thread Communication 2.6 Runnable Interface	<b>(08L)</b>
<b>Unit 3: Servlet</b> 3.1 Introduction 3.2 How It Differs from CGI 3.3 Types of Servlets 3.4 The Life Cycle of a Servlet 3.5 Execution Process of Servlet Application 3.6 Session Tracking 3.7 Cookie Class 3.8 Servlet- JDBC	<b>(08L)</b>

**Unit 4: JSP (06L)**

- 4.1 Introduction to JSP
- 4.2 The Life Cycle of a JSP
- 4.3 Components of JSP Directives, Tags, Scripting Elements
- 4.4 Execution process of JSP Application
- 4.5 Building a simple application using JSP
- 4.6 JSP with Database

**Unit 5: Networking (08L)**

- 5.1 The java.net package
- 5.2 Connection-Oriented Transmission – Stream Socket Class
- 5.3 Creating a Socket to a Remote Host on a Port (Creating TCP Client and Server)
- 5.4 Simple Socket Program Example

**References:**

1. The Complete Reference – JAVA Herbert Schildt.
2. Core java –II by Cay S. Horstmann and Gary Cornell.
3. Complete Reference J2EE – Jim Keogh.
4. Head First Java, Kathy Sierra & Bert Bates, 2nd Edition, Shroff/O'Reilly.
5. Java Persistence with Hibernate by Christian Bauer, Gavin King.

**Website Reference Link:**

1. [www.W3schools.com](http://www.W3schools.com)
2. <https://www.javatpoint.com>

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes**

**Class:** SYBBA (C.A) (Sem IV)  
**Course:** Advanced Java

**Subject:** BBA (C.A)  
**Course Code:** BCA-251-MJM

**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)															
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3	3			3				3		3			
CO2	3	3	3		3	3				3		3			
CO3	3	3	3			3				3				3	
CO4	3	3	3			3				3				3	
CO5	3	3	3			3				3				3	
CO6	3	3	3		3	3				3		3		3	
CO7	3	3	3			3				3		3			

**PO1: A Fundamental Knowledge and Coherent Understanding:**

CO1, CO2, CO3, CO4, CO5, CO6, and CO7 are mapped to PO1 because the course equips students with a multidisciplinary understanding of Java programming and web development, which integrates well with core commerce and management disciplines, enhancing their knowledge base.

**PO2: Procedural Knowledge for Skill Enhancement:**

The course provides hands-on skills through Java programming practices. CO1 (Java Database Connectivity) and CO5 (JSP for dynamic web pages) map directly to PO2 as students gain procedural skills in developing client-server and dynamic applications.

**PO3: Critical Thinking and Problem-Solving Skills:**

This outcome is aligned with most course outcomes (CO1, CO2, CO4, CO5, CO6, CO7), as solving complex issues like developing multithreaded applications or handling synchronization requires critical analysis, which helps solve real-world computing and business problems.

**PO5: Analytical Reasoning Skills:**

The course outcomes, such as CO2 and CO6 (multithreading and client-server applications), help students develop analytical reasoning, as they need to assess the performance impacts and synchronization problems of their programs.

**PO6: Innovation, Employability and Entrepreneurial Skills:**

Java programming and web development skills (CO1 to CO7) empower students to innovate in software solutions, making them highly employable in IT roles. Understanding Java Server Pages (CO3) and Java Servlets (CO4) also opens up entrepreneurial opportunities in web and software development.

**PO10: Design and Development of System:**

The ability to design efficient Java applications (CO4 and CO6) relates closely to PO10. Students develop systems that meet specific business or societal needs, considering user interaction and server management.

**PO12: Research-Related Skills:**

Students develop research-oriented skills through tasks like analyzing synchronization issues (CO2) or optimizing web applications (CO4), which require them to explore advanced Java topics.

**PO14: Area Specific Expertise:**

The course provides Java expertise, which complements the domain knowledge in computer applications, aligning CO1, CO3, CO4, and CO6 with PO14.



**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Major Mandatory (Theory)
<b>Course Code</b>	: BCA-252-MJM
<b>Course Title</b>	: Advanced PHP
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 30

**Course Objectives:**

1. To know & understand concepts of internet programming.
2. Understand how server-side programming works on the web.
3. Understanding How to use WordPress.
4. Utilize Object-Oriented PHP and design patterns to make code more scalable and maintainable.
5. To develop Application of AJAX in web application.
6. Manage the relationship between cookies and sessions.
7. To explore advanced PHP features such as working with database, managing sessions, and handling file uploads, enabling the development of robust and scalable web applications.

**Course Outcomes:**

**By the end of the course, students will be able to:**

- CO1.** Understand and implement object-oriented features of PHP programming.
- CO2.** Illustrate AJAX and web services to develop interactive web applications.
- CO3.** Students will be able to analyze the construction of a web page and relate how PHP and XML combine to produce the web page.
- CO4.** Students will be able to combine Ajax with PHP.
- CO5.** Develop fast and scalable application combining the power of Ajax and PHP.
- CO6.** Dynamically access and update PHP applications using XML.
- CO7.** Students will be able to develop interface a PHP script with a MySQL database.

Topics and Learning Points		Teaching Hours
Topics/ Contents		
<b>Unit 1</b>	<b>PHP Basics</b>	05
	1.1 Setting up a Development Environment	
	1.2 Variables, Numbers and Strings	
	1.3 Using Arrays	
	1.4 Conditional Statements	
	1.5 Combing Loops and Arrays	
<b>Unit 2</b>	<b>Functions, Objects and Working with Forms</b>	07
	2.1 PHP's Built-in functions	
	2.2 Creating Custom functions	
	2.3 Passing Values by Reference	
	2.4 Building a Form	
	2.5 Differences between POST and GET	
	2.6 Preserving User Input	
<b>Unit 3</b>	<b>Web Techniques</b>	07
	3.1 Server information	
	3.2 Processing forms	
	3.3 Sticky forms	
	3.4 Setting response headers	
	3.5 Setting and Reading Cookies	
	3.6 Understanding Session Variables	
<b>Unit 4</b>	<b>MySQL Database Overview</b>	05
	4.1 phpMyAdmin Overview	
	4.2 Using a MySQL Database	
	4.3 Reading and Writing Data	
<b>Unit 5</b>	<b>XML</b>	06
	5.1 Introduction XML	
	5.3 XML document Structure	
	5.4 PHP and XML	

- 5.4 The document object model
- 5.5 The simple XML extension
- 5.6 Changing a value with simple XML

### References:

1. Php: A Beginner's Guide 1st Edition McGraw-Hill Osborne Media; 1 edition by Vikram Vaswani
2. Murach's PHP and MySQL (2nd Edition) by Joel Murach and Ray Harris
3. PHP: The Complete Reference Paperback – 1 Jul 2017 by Steven Holzner (Author)
4. Building Web Services with Java, 2nd Edition, S. Graham and others, Pearson Edn., 2008.
5. Programming PHP - Rasmus Lerdorf and Kevin Tatroe, O'Reilly publication
6. Beginning PHP 5 - Wrox publication
7. "Beginning PHP and MySQL From Novice to Professional" by W Jason Gilmore
8. "PHP Object - Oriented Solutions" by David Powers

### Website Reference Link:

1. [www.php.net.in](http://www.php.net.in)
2. [www.W3schools.com](http://www.W3schools.com)

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes**

**Class:** SYBBA (C.A) (Sem IV)  
**Course:** Advanced PHP

**Subject:** BBA (C.A)  
**Course Code:** BCA-252-MJM

**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)															
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3													
CO2		3	3	3											
CO3	3	3	3		3										
CO4	3	3	3		3	3									
CO5	3	3	3		3	3				3					
CO6	3	3	3	3						3					
CO7	3	3	3	3	3	3				3					

**PO1: A Fundamental Knowledge and Coherent Understanding:**

COs is strongly mapped with CO1, CO3, CO4, CO5, CO6, and CO7, as the students will develop a strong foundation in PHP and its object-oriented features, enabling them to understand the fundamentals of web development and its connection with XML, MySQL, and AJAX.

**PO2: Procedural Knowledge for Skill Enhancement:**

CO1, CO2, CO3, CO4, CO5, CO6, and CO7 maps well with the hands-on experience with PHP, AJAX, XML, and MySQL gives students practical exposure to building web applications, thus enhancing their technical skills.

**PO3: Critical Thinking and Problem-Solving Skills:**

CO2, CO3, CO4, CO5, CO6, and CO7 is linked to all course outcomes, particularly, as the course encourages students to develop solutions for dynamic web applications, integrating various technologies like PHP, AJAX, and XML.

**PO4: Communication Skills:**

CO2, CO6, and CO7, is moderately supported by where students need to articulate how different technologies (PHP, AJAX, XML) integrate to build web applications and communicate their results effectively.

**PO5: Analytical Reasoning Skills:**

CO3, CO4, CO5, and CO7 is crucial in. Analysing how PHP, AJAX, and MySQL work together to create scalable applications requires students to apply their analytical reasoning skills.

**PO6: Innovation, Employability, and Entrepreneurial Skills:**

CO4, CO5, and CO7 maps to all outcomes, especially, where students learn to develop innovative solutions for dynamic, fast, and scalable web applications using a combination of PHP, AJAX, and MySQL.

**PO10: Design and Development of Systems:**

CO5, CO6, and CO7 are highly relevant for as students are tasked with developing scalable and efficient web applications using PHP and AJAX.

**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Major Mandatory (Theory)
<b>Course Code</b>	: BCA-253-MJM
<b>Course Title</b>	: Operating System Concepts
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 30

**Course Objectives:**

1. To learn the fundamentals of Operating Systems and handle processes and threads
2. To explore the concept of processes, including process states, process control blocks, user interfaces, and system calls.
3. To know the scheduling concept.
4. To familiarize students with the Linux operating system, including its architecture, features, file system, and process environment.
5. To learn programmatically to implement Linux OS mechanisms.
6. To know about Basic Administration of Linux.
7. To introduce the fundamental concepts and services provided by operating systems to users, including process management, memory management, and file systems.

**Course Outcomes:**

**By the end of the course, students will be able to:**

- CO1.** Describe various services provided by operating systems, including process management, memory management, and file systems.
- CO2.** Understanding of process states, the process control block, and system calls, and will be able to explain how these components interact in an operating system.
- CO3.** Explain the architecture, features, and file system of the Linux operating system, and

describe the process environment in Linux.

**CO4.** Demonstrate an understanding of memory management techniques, including paging, segmentation, and virtual memory, and be able to convert logical to physical addresses.

**CO5.** Apply scheduling algorithms (FCFS, SJF, and Round Robin), identify and resolve problems in concurrent processes, and implement solutions for critical sections, mutual exclusion, synchronization, and deadlock.

**CO6.** Describe algorithms for process, memory and disk scheduling

**CO7.** Apply technique for inter-process communication and Multithreading.

	Topics and Learning Points	Teaching Hours
<b>Unit 1:</b>	<p><b>Introduction to Operating System</b></p> <p>1.1 Introduction to Operating Systems</p> <p>1.2 Different services provided by Operating System to Users.</p> <p>1.3 Introduce the concept of Process:</p> <p>    1.3.1 Process States</p> <p>    1.3.2 Process Control Block</p> <p>    1.3.3 User Interface</p> <p>    1.3.4 System Calls.</p> <p>1.4 Introduction to Linux Operating System:</p> <p>    1.4.1 Features of Linux</p> <p>    1.4.2 Architecture of the Linux</p> <p>    1.4.3 Introduction to File System</p> <p>    1.4.4 Process Environment.</p>	<b>(10L)</b>
<b>Unit 2:</b>	<p><b>Memory Management</b></p> <p>2.1 Memory Management Techniques</p> <p>2.2 Logical &amp; Physical Memory</p> <p>2.3 Conversion of Logical to Physical Address</p> <p>2.4 Paging</p> <p>2.5 Segmentation</p>	<b>(10L)</b>

- 2.6 Segment with Paging
- 2.7 Virtual Memory Concept
- 2.8 Demand Paging
- 2.9 Page Replacement Algorithm
  - 2.9.1 FIFO Algorithm
  - 2.9.2 Optimal Algorithm
  - 2.9.3 MRU
  - 2.9.4 LRU
- 2.10 Thrashing

**Unit 3: Processor Management and Synchronization (10L)**

- 3.1 Process Control and Management
- 3.2 PCB
- 3.3 Job and Processor Scheduling
- 3.4 Scheduling Algorithms
  - 3.4.1 FCFS (Non-preemptive)
  - 3.4.2 SJF (Non-preemptive & preemptive)
  - 3.4.3 Round Robin
- 3.5 Problems of Concurrent Processes
  - 3.5.1 Critical Sections
  - 3.5.2 Mutual Exclusion
  - 3.5.3 Synchronization
  - 3.5.4 Deadlock

### References:

1. Operating System Concepts, 9th Edition, John Wiley & Sons, Inc. by Silberschatz, Peter Baer Galvin, Greg Gagne,
2. Linux Administration, A Beginner's, Guide by Wale Soyinka, Tata McGrawHill
3. Operating Systems: Internals and Design Principles, 8th edition Pearson Education Limited, 2014 by William Stallings.
4. Linux Shell Scripting By Ganesh Naik
5. Linux Bible By Christopher Negus



**Website Reference Link:**

1. <https://www.webopedia.com/operating-system>
2. <https://www.javatpoint.com/linux-system-admin-commands>

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes****Class:** SYBBA (C.A) (Sem IV)**Subject:** BBA (C.A)**Course:** Operating System Concepts**Course Code:** BCA-253-MJM**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

<b>Programme Outcomes (POs)</b>															
<b>Course Outcomes</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3													
CO2		3	3	3											
CO3	3	3	3		3										
CO4	3	3	3		3	3									
CO5	3	3	3		3	3				3					
CO6	3	3	3	3						3					
CO7	3	3	3	3	3	3				3					

**PO1: A Fundamental Knowledge and Coherent Understanding**

CO1, CO2, CO3, CO4, CO5, CO6, CO7 all contribute to PO1 as students gain a deep understanding of core operating system concepts such as process management, memory management, scheduling, and file systems. These areas provide a strong foundation in computer science and applications.

**PO2: Procedural Knowledge for Skill Enhancement**

All course outcomes (CO1 to CO7) strongly contribute to PO2, as students enhance their procedural knowledge by learning operating system procedures, including system calls, memory management techniques, and scheduling algorithms.

**PO3: Critical Thinking and Problem-Solving Skills**

Each COs are strongly mapped to PO3 because students will learn to solve complex problems, such as process synchronization, memory allocation, and resolving concurrency issues in operating systems. The design and application of algorithms further enhance their problem-solving skills.

**PO4: Communication Skills**

While not as directly related to technical aspects, CO1, CO3, CO5, CO6 & CO7 are strongly contribute to PO4 by encouraging students to use technical language in explaining OS concepts and collaborating on system-related projects, thereby enhancing communication.

**PO5: Analytical Reasoning Skills**

CO5, CO6 and CO7 are linked to PO5 because operating systems require critical analytical skills to evaluate and implement processes, memory, and scheduling algorithms. Understanding the strengths and limitations of different approaches fosters strong analytical reasoning.

**PO6: Innovation, Employability, and Entrepreneurial Skills**

Strong connections exist between CO3 and CO6 with PO6, as students learn about system design and problem-solving techniques that are essential for employability in technical fields and can inspire innovation in the development of new software systems.

**PO7: Multidisciplinary Competence**

CO3 and CO4 are moderately contribute to PO7 by providing interdisciplinary insights, such as applying knowledge of operating systems to other domains like networking, embedded systems, and database management.

**PO10: Design and Development of System**

CO5 and CO6 are strongly related to PO10 because they focus on designing and developing solutions to complex computing problems, such as memory allocation, process scheduling, and multithreading, which are critical components of operating systems.

**PO11: Ethical and Social Responsibility**

CO1, CO3 and CO5 moderately relate to PO11 by fostering an understanding of the ethical implications of software systems, particularly in how operating system designs can impact security, privacy, and fairness in resource allocation.

**PO12: Research-Related Skills**

All COs are moderately contributed to PO12 as students engage in researching and experimenting with new techniques for process synchronization, memory management, and inter-process communication, contributing to their research skills.

**PO13: Teamwork**

CO3, CO6 and CO7 strongly contribute to PO13 by requiring collaborative efforts to solve OS problems, develop solutions for multithreading, and manage concurrent processes in team-based projects.

**PO14: Area-Specific Expertise**

CO2, CO3 and CO7 moderately supports PO14, particularly for students specializing in computer science, as they gain expertise in operating systems through in-depth study of process management, scheduling, memory systems, and Linux OS environments.

**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Major Mandatory (Practical)
<b>Course Code</b>	: BCA-254-MJM
<b>Course Title</b>	: Practical II
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 60

**Course Objectives:**

1. To Learn the advanced concepts of Java Programming
2. To Learn the design and develop web application using Java
3. To Learn Network programming using Java
4. To develop a web application using java technologies
5. To create fully functional website/web application using Java script, PHP, XML etc.
6. To develop an ability to design and implement static and dynamic website
7. To handling Cookies and Sessions using PHP, SERVLETS and JSP

**Course Outcomes:**

**By the end of the course, students will be able to:**

- CO1.** Learn to access database using JDBC in Java
- CO2.** Develop Dynamic Web Pages using Servlet & JSP
- CO3.** Develop client server applications using SOCKET Programming
- CO4.** Understand the construction of webpages & relate to PHP & XML.
- CO5.** Design interactive programs using PHP & XML.
- CO6.** Develop user interface based application.
- CO7.** Integrate PHP with databases for secure, optimized CRUD operations.

**Topics and Learning Points****List of Assignment:**

1. Assignment on Java JDBC
2. Assignment on Multithreading
3. Assignment on Servlet
4. Assignment on JSP
5. Assignment on Networking – Socket Programming
6. Assignment on Basic of PHP
7. Assignment on Control Statement and Loops
8. Assignment on Functions
9. Assignment on PHP Database
10. Assignment on POST() & GET()
11. Assignment on PHP Array
12. Assignment on PHP Classes
13. Assignment on String and Math Functions
14. Assignment on Sticky Forms
15. Assignment on XML
16. Assignment on DOM XML

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes**

**Class:** SYBBA (C.A) (Sem IV)  
**Course:** Practical II

**Subject:** BBA (C.A)  
**Course Code:** BCA-254-MJM

**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)															
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3			3		3				3			3	
CO2	3	3	3			3	3			3			3		
CO3	3	3	3		3		3			3		3	3		
CO4	3			3		3	3		3						
CO5	3		3	3			3		3						
CO6	3					3	3			3		3	3		
CO7	3				3		3			3	3			3	

**PO1: A Fundamental Knowledge and Coherent Understanding:**

CO1, CO2, CO3, CO4, CO5, CO6, and CO7 align with PO1 by providing a broad understanding of Java and PHP technologies. Students gain fundamental knowledge in database connectivity, web development, and client-server communication, integrating various aspects of computer science with business and management contexts.

**PO2: Procedural Knowledge for Skill Enhancement:**

The course focuses on enhancing procedural skills through practical applications. CO1 (JDBC), CO2 (Servlet & JSP), and CO3 (SOCKET Programming) provide students with detailed procedural knowledge in software development, which is critical for building and managing dynamic and interactive web applications.

**PO3: Critical Thinking and Problem-Solving Skills:**

This outcome is met through CO2 (dynamic web pages), CO3 (client-server applications), and CO5 (interactive programs), which require critical thinking to solve complex programming and integration issues, thereby enhancing problem-solving skills.

**PO4: Communication Skills:**

CO4 and CO5, which involve understanding and creating web pages with PHP and XML, help improve communication skills by requiring clear, logical explanations and the ability to integrate and present technical information effectively.

**PO5: Analytical Reasoning Skills:**

Students develop analytical skills through CO1 (JDBC integration), CO3 (SOCKET Programming), and CO7 (CRUD operations). These tasks require evaluating system performance, security, and optimization, thereby strengthening their analytical reasoning.

**PO6: Innovation, Employability, and Entrepreneurial Skills:**

CO2 (Servlet & JSP), CO4 (webpage construction), and CO6 (user interface applications) prepare students for innovative roles in web development and software engineering, enhancing employability and entrepreneurial skills by developing practical, marketable skills.

**PO7: Multidisciplinary Competence:**

The integration of Java and PHP technologies (CO1 to CO7) demonstrates competence across disciplines. For instance, understanding and applying these technologies in various contexts (web development, database management) aligns with PO7's emphasis on interdisciplinary knowledge.

**PO9: Traditional Knowledge into Modern Application:**

CO4 and CO5 apply traditional programming concepts (like HTML, XML) to modern web development tasks, bridging traditional knowledge with contemporary applications.

**PO10: Design and Development of System:**

The course outcomes CO2, CO3, CO6, and CO7 emphasize designing and developing complex systems, such as dynamic web pages and client-server applications, meeting the requirements of PO10 for designing efficient solutions to real-world problems.

**PO11: Ethical and Social Responsibility:**

CO1 (JDBC) and CO7 (secure CRUD operations) emphasize the importance of ethical considerations in database management and application security, aligning with PO11's focus on ethical and social responsibility.

**PO12: Research-Related Skills:**

CO3 (SOCKET Programming) and CO6 (user interface applications) encourage research into programming techniques and technologies, fostering an understanding of research methodologies and application development.

**PO13: Teamwork:** Many of the course outcomes involve collaborative projects and teamwork, such as developing complex web applications and integrating technologies (CO2, CO3, CO6), aligning with PO13's focus on effective teamwork.

**PO14: Area-Specific Expertise:** CO1 (JDBC), CO4 (PHP and XML), and CO7 (PHP with databases) provide specialized knowledge and expertise in software development and web technologies, aligning with PO14's requirement for area-specific expertise.



**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Minor (Theory)
<b>Course Code</b>	: BCA-261-MN
<b>Course Title</b>	: Web Designing
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 30

**Course Objectives:**

1. To identify the key components of web design, including layout, color theory, and user Interface (UI) design principles.
2. To describe the basic structure of web pages using HTML and CSS.
3. To write and structure semantic HTML for web content.
4. To develop the skill & knowledge of Web page design.
5. To Understand the Fundamentals of Web Layouts
6. To Develop Proficiency in HTML and CSS
7. To Learn Responsive Design Techniques.

**Course Outcomes:**

**By the end of the course, students will be able to:**

- CO1.** Understand the Basics of Web Design
- CO2.** Create Basic Web Pages Using HTML
- CO3.** Style Web Pages Using CSS
- CO4.** Design Responsive and Adaptive Websites
- CO5.** Collaborate in a Web Development Environment
- CO6.** Create and Deploy Live Websites
- CO7.** Proficiency in Web Design Tools

Topics and Learning Points		Teaching Hours
<b>Unit 1:</b>	<b>Introduction of Web Designing</b>	<b>(10L)</b>
	<ul style="list-style-type: none"> <li>1.1 Basic principles involved in developing a web site</li> <li>1.2 Planning process</li> <li>1.3 Five Golden rules of web designing</li> <li>1.4 Designing navigation bar</li> <li>1.5 Page design</li> <li>1.6 Home Page Layout</li> <li>1.7 Design Concept.</li> <li>1.8 Brief History of Internet</li> <li>1.9 What is World Wide Web</li> <li>1.10 Why create a web site</li> <li>1.11 Web Standards</li> </ul>	
<b>Unit 2:</b>	<b>Introduction to HTML</b>	<b>(10L)</b>
	<ul style="list-style-type: none"> <li>2.1 What is HTML</li> <li>2.2 HTML Documents</li> <li>2.3 Basic structure of an HTML document</li> <li>2.4 Creating an HTML document</li> <li>2.5 Mark up Tags</li> <li>2.6 Heading-Paragraphs</li> <li>2.7 Line Breaks</li> <li>2.8 HTML Tags.</li> <li>2.9 Introduction to elements of HTML</li> <li>2.10 Working with Text</li> <li>2.11 Working with Lists, Tables and Frames</li> <li>2.12 Working with Hyperlinks, Images and Multimedia</li> <li>2.13 Working with Forms and controls</li> </ul>	
<b>Unit 3:</b>	<b>Introduction to Cascading Style Sheets</b>	<b>(10L)</b>
	<ul style="list-style-type: none"> <li>3.1 Concept of CSS</li> <li>3.2 Creating Style Sheet</li> <li>3.3 CSS Properties</li> <li>3.4 CSS Styling(Background, Text Format, Controlling Fonts)</li> <li>3.5 Working with block elements and objects</li> <li>3.6 Working with Lists and Tables</li> <li>3.7 CSS Id and Class</li> <li>3.8 Box Model(Introduction, Border properties, Padding Properties, Margin properties)</li> <li>3.9 CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar,Image Sprites, Attribute sector)</li> <li>3.10 CSS Color</li> <li>3.11 Creating page Layout and Site Designs.</li> </ul>	

### References:

1. "HTML and CSS: Design and Build Websites" by Jon Duckett
2. "Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability" by Steve Krug
3. "Responsive Web Design with HTML5 and CSS: Develop future-proof responsive websites using the latest HTML5 and CSS techniques" by Ben Frain
4. "Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics" by Jennifer Robbins

### Website Reference Link:

1. <https://www.geeksforgeeks.org/design-a-web-page-using-html-and-css/>
2. <https://www.browserstack.com/guide/build-a-website-using-html-css>

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes****Class:** SYBBA (C.A) (Sem IV)**Subject:** BBA (C.A)**Course:** Web Designing**Course Code:** BCA-261-MN**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)															
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3		3						3					
CO2	3	3	3							3					
CO3	3	3								3					
CO4	3	3	3		3					3					
CO5	3	3		3		3	3			3			3		
CO6	3	3	3	3	3	3	3		3	3	3	3		3	3
CO7	3	3	3			3				3				3	

**PO1: A Fundamental Knowledge and Coherent Understanding**

All COs contributes significantly to PO1 as students need to apply a multidisciplinary understanding (like HTML, CSS, and web hosting) to create and deploy live websites. This knowledge helps students integrate various domains (e.g., design, computing) into their work.

**PO2: Procedural Knowledge for Skill Enhancement**

All COs is directly related to PO2, where students develop hands-on skills in creating live websites. This process involves learning procedures such as setting up hosting, working with FTP, and configuring servers, which enhances their procedural knowledge.

**PO3: Critical Thinking and Problem-Solving Skills**

CO2, CO4, CO6 and CO7 fosters critical thinking and problem-solving as students must troubleshoot deployment issues, optimize website performance, and ensure site functionality under various real-world scenarios.

**PO4: Communication Skills**

CO1, CO5 & CO6 moderately aligns with PO4 since communication is essential in web development teams, especially when deploying websites collaboratively. Clear documentation, sharing of tasks, and effective feedback mechanisms are crucial in this process.

**PO5: Analytical Reasoning Skills**

CO4 & CO6 allows students to analyze the effectiveness of their deployed website, assess user interaction, and make data-driven improvements, thereby enhancing their analytical reasoning skills.

**PO6: Innovation, Employability, and Entrepreneurial Skills**

By mastering the ability to create and deploy websites, students are better positioned for web development jobs and entrepreneurial opportunities. CO5, CO6 & CO7 fosters an innovative approach to tackling real-world web challenges.

**PO10: Design and Development of Systems**

All COs is highly relevant to PO10, as creating and deploying a website is a form of system design. Students must consider user needs, security, and system functionality while meeting public health, safety, and environmental concerns.

**PO11: Ethical and Social Responsibility**

CO6 contributes to understanding ethical aspects of website development, such as data privacy, security standards, and inclusive web design, making students socially responsible web developers.

**PO12: Research-Related Skills**

CO6 fosters research-related skills as students often need to investigate and apply the latest web technologies, tools, and deployment strategies.

**PO13: Teamwork**

Deploying a live website usually involves team collaboration, requiring constructive teamwork for success, making CO5 strongly related to PO13.

**PO14: Area Specific Expertise**

Web development expertise gained in CO6 & CO7 directly applies to areas like finance, marketing, or HR, where websites are critical. This supports PO14.

**PO15: Environmental Awareness**

CO6 raises awareness of environmental aspects by encouraging students to develop eco-friendly, low-energy-consumption websites, aligning with PO15.

**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Minor (Practical)
<b>Course Code</b>	: BCA-262-MN
<b>Course Title</b>	: Web Designing Lab
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 60

**Course Objectives:**

1. To introduce students to the fundamental technologies used in web design, including HTML5, CSS3, and their role in creating responsive and interactive web pages.
2. To introduce the fundamentals of Internet, and the principles of web design.
3. To construct basic websites using HTML and Cascading Style Sheets
4. To provide students with hands-on experience using web design tools.
5. To develop students' skills in testing web pages across different browsers and devices, and debugging common issues to ensure cross-browser compatibility and functionality.
6. The purpose of Web Designing is to provide instructions on creating and maintaining a web page for publishing on the Internet.
7. Students who are interested in Web design that may become responsible for designing a Web in his/her career field.

**Course Outcomes:**

**By the end of the course, students will be able to:**

**CO1.** : It will equip the students with skills required for designing, developing web applications in Information Technology.

**CO2.** Develop web pages using the HTML and CSS features with different layouts as per need of applications.

**CO3.** Design web pages that are accessible to users with different needs, ensuring compliance with web accessibility standards.

**CO4.** Ability to test web pages across multiple browsers and devices, identify compatibility issues, and debug code to ensure smooth functionality.

**CO5.** Create well-structured web pages using HTML5 and apply CSS3 to design responsive, visually appealing layouts.

**CO6.** To create web elements like buttons, banners & Bars and of course complete UI designs.

**CO7.** Setting up page layout, color schemes, contract, and typography in the designs.

### Topics and Learning Points

1. Web Technology Assignments
2. Create an HTML page with 7 separate lines in different colors and size. State the color of each line in the text.
3. Create an HTML page with all the different text styles (bold, italic, and underlined).
4. Create an html page containing the polynomial expression as follows:
  1.  $a^2+b^2=(a-b)^2+2ab$
  2.  $(a+b)^2-(a-b)^2=4ab$
  3. C12H22O11
4. Create an HTML page with a red background and message “warning” in the large size. Add scrolling text “read the message” below it.
5. Create an html page which contain the Video tag, Audio tag and Iframe tag.
6. Write the HTML code which generates the following output
  - DSA
    - Array
    - Linked List
    - stack
    - Queue
  - Web Technologies
    - HTML
    - CSS
    - JavaScript
  - Aptitude
  - Gate
  - Placement

7. Write the HTML code which generates the following output

reversed attribute

- 3.HTML
- 2.CSS
- 1.JS

start attribute

5. HTML
6. CSS
7. JS

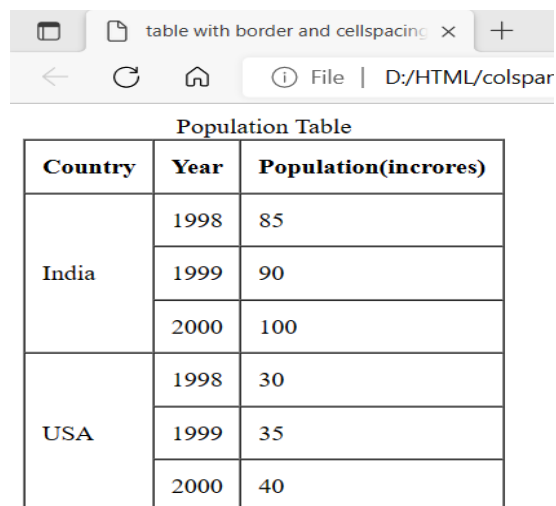
type attribute

- i. HTML
- ii. CSS
- iii. JS

8. Write the HTML code which generates the following output

- Coffee
- Tea
  - a. Black tea
  - b. Green tea
    1. Africa
    2. China
    3. Milk

9. Write HTML code to generate following Output.



The screenshot shows a web browser window with the title 'table with border and cellspacing'. The address bar shows the file path 'D:/HTML/colspar'. The main content of the browser is a table with the following structure:

Country	Year	Population(incrores)
India	1998	85
	1999	90
	2000	100
USA	1998	30
	1999	35
	2000	40



10. Design an HTML form for login. form should consist of fields such as firstname, lastname, Email id, password and provide button to submit as well as reset the form content.
11. Design an HTML form for Student Registration. form should consist of fields such as Firstname, Middlename, Lastname, Course (to be selected from the list), Gender, Phone no, Address, Upload file, Email id, Password, Retype Password and provide button to submit as well as reset the form content.
12. Design an HTML form to take the information of a customer for booking a travel plan consisting of fields such as Name, Address, contact no, Gender, Preferred season(checkboxes), Location types (to be selected from the list), etc. and provide button to submit as well as reset the form content. (All fields should be properly aligned).
13. Design an HTML form for Personal information. and provide button to submit as well as reset the form content. And one more clickable button to show a message box as hello user! And for submit button as form is submitted.
14. Write HTML code to generate the following output and display each element of the list in different size,color and font(Use Inline CSS).

1. Fruit
  - mango
  - apple
  - orange
2. vegetable
  - Tomato
  - Potato
  - Onion

15. Write HTML code to generate the following output and display each element of the list in different size, color and font (Use Inline CSS).

### **Honda**

- Petrol
  1. Honda City
  2. Brino
- Diesel
  1. Amaze
  2. Brino

### **Maruti-Suzuki**

- Petrol
  1. Swift
  2. Ritz
- Diesel
  1. Swift-Desire

16. Write HTML code to generate the following output and display each element of the list in different size, color and font (Use External CSS).

- 1. Non-Flowering Plant
  - Ferns
  - Aloe-vera
- 2. Flowering Plants
  - Lily
  - Rose
    - A. Red Rose
    - B. White Rose

17. Write HTML code to generate the following output. (Use Internal CSS).

Operating system		
Author	Name	Price
Andrew S.	Operating System	500/-
William stalling	Operating System Concepts	
Total	Rs.1000/-	

18. Write HTML code to generate the following output. (Use Inline CSS).

supplier name	product name	product details		Total price
		price	quantity	
poonam electronics	printer	2500	08	20000
Raj electronics	scanner	1800	05	9000

19. Create an HTML page with the following specification.

1. The title should be about myself.
2. Color a background with pink color.
3. Place your name at the top of a page in large text and centered.
4. Add names of your family members each in a different size, color and font family.
5. Add a scrolling text with a message of your choice.
6. Add your image at the bottom. (Use Inline CSS to format the webpage).

20. Create HTML page with following specifications Title should be about your College
- i. Put college image in the background
  - ii. Place your college name at the top of page in large text followed by address in smaller size.  
and font
  - iii. Add names of courses offered each in different color style.
  - iv. Add scrolling text about college
  - v. Add any image at the bottom.
- (Use Internal CSS to format the web page)
21. Write a program using different CSS properties to display links as boxes/Button and Give it hover effect.

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes****Class:** SYBBA (C.A) (Sem IV)**Subject:** BBA (C.A)**Course:** Web Designing Lab**Course Code:** BCA-262-MN**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

<b>Programme Outcomes (POs)</b>															
<b>Course Outcomes</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3					3				3					
CO2	3	3	3			3									
CO3	3		3		3										
CO4	3		3		3					3	3				
CO5	3	3			3					3	3			3	
CO6	3	3				3								3	
CO7	3	3				3				3				3	

**PO1: A Fundamental Knowledge and Coherent Understanding:**

All COs align strongly with PO1 because students gain knowledge about the fundamental principles of web design and the structure of web pages using HTML and CSS. This equips them with the ability to understand multidisciplinary applications in IT and other fields.

**PO2: Procedural Knowledge for Skill Enhancement:**

CO2, CO5, CO6, CO7 have high relevance to PO2 as students gain hands-on experience developing and structuring web pages, which enhances their procedural and technical web development skills.

**PO3: Critical Thinking and Problem-Solving Skills:**

CO2, CO3, CO4 are closely related to PO3 because students learn to design accessible websites, solve compatibility issues across browsers, and debug code, fostering problem-solving capabilities in real-life web development scenarios.

**PO5: Analytical Reasoning Skills:**

CO3, CO4, CO5 contribute to PO5, as testing across browsers and analyzing user requirements involve critical analysis and reasoning in understanding the web design process and choosing appropriate technologies.

**PO6: Innovation, Employability, and Entrepreneurial Skills:**

CO1, CO2, CO6, CO7 support PO6 by providing students with the skills to innovate in UI/UX design, identify new web design opportunities, and be ready for employment or entrepreneurial ventures in the web development field.

**PO10: Design and Development of Systems:**

CO1, CO4, CO5, CO7 directly relate to PO10, as students develop efficient web pages and systems that meet various user needs while considering technical, cultural, and accessibility factors in design.

**PO11: Ethical and Social Responsibility:**

CO3, CO4 address PO11 by emphasizing compliance with web accessibility standards, ensuring that web pages are usable for individuals with different needs, and promoting social responsibility in web design.

**PO14: Area-Specific Expertise:**

CO5, CO6, CO7 enhance area-specific expertise by allowing students to apply web design concepts in Computer Science and Applications, which is closely related to web development technologies.

**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

<b>Name of the Programme</b>	: BBA (Computer Application)
<b>Programme Code</b>	: UBCA
<b>Class</b>	: S.Y. BBA (C.A)
<b>Semester</b>	: IV
<b>Course Type</b>	: Open Elective (Practical)
<b>Course Code</b>	: BCA-266-OE
<b>Course Title</b>	: Internet Skills & Applications Lab
<b>No. of Credits</b>	: 02
<b>No. of Teaching Hours</b>	: 30

**Course Objectives:**

1. Understand and Utilize Web Browsers.
2. Master Email Communication.
3. Apply Mail Merge Techniques.
4. Engage with Newsgroups and Chatrooms.
5. Use FTP for File Transfers.
6. Utilize Telnet for Remote Access.
7. Understand and Configure IP Addressing.

**Course Outcomes:****By the end of the course, students will be able to:**

- CO1.** Gain a solid understanding of fundamental concepts and proficiency with Web Browsers
- CO2.** Capable of setting up a new email account on popular platforms like Gmail, Outlook, or Yahoo.
- CO3.** Learn to create and manage contact lists within email applications.
- CO4.** How to access and participate in newsgroups, understanding the structure and etiquette of discussions.
- CO5.** Connect to remote systems using Telnet and perform basic commands for remote management.
- CO6.** Gain skills in setting up and customizing a blog using popular platforms such as WordPress or Blogger.
- CO7.** Learn basics of IP Addressing.

Topics and Learning Points	Teaching Hours
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1. Practical's on Web Browsers.(Search, home page, add to favorite list etc)
2. Practical's on E-Mail (Create E-Mail Account, Send & Receive Email)
3. Practical's on Mail Merge (Creating Contacts, Event, Meetings)
4. Practical's on Newsgroup & Chartrooms
5. Practical's on FTP Commands
6. Practical's on Telnet Commands
7. Practical's on E-mail Marketing
8. Practical's on Creating Blogs, Remote login
9. Practical's on IP Addressing
10. Practical's on Data Transfer Rate

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes****Class:** SYBBA (C.A) (Sem IV)**Subject:** BBA (C.A)**Course:** Internet Skills & Applications Lab**Course Code:** BCA-266-OE**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

<b>Programme Outcomes (POs)</b>															
<b>Course Outcomes</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3	3	1	3	3	3	2	3	1	1	1	3	3	1
CO2	3	3	3	3	3	2	3	3	3	2	1	1	3	3	1
CO3	3	3	3	1	3	3	3	2	3	3	1	1	3	3	1
CO4	3	3	3	3	3	3	3	3	3	1	3	1	3	3	1
CO5	3	2	3	1	3	2	3	2	3	3	3	1	3	3	1
CO6	3	3	3	1	3	2	3	3	3	1	3	1	3	3	1
CO7	3	2	3	2	3	3	3	3	3	3	2	1	3	3	1

**PO1: A Fundamental Knowledge and Coherent Understanding:**

All CO'S are strongly mapped as they focus on providing fundamental and practical oriented concepts on Internet & their application.

**PO2: Procedural Knowledge for Skill Enhancement:**

All CO's are strongly mapped as it uses internet for web browsers, search engines, and various online tools and services.

**PO3: Critical Thinking and Problem-Solving Skills:**

All CO'S are strongly as it focuses on developing advanced search skills, including the ability to formulate complex search queries, use search operators effectively, evaluate search results critically, and identify credible sources of information online

**PO4: Communication Skills:**

CO2 CO4 is strongly mapped as they focus on online communication and collaboration tools, like e-mail and other tools.

**PO5: Analytical Reasoning Skills:**

All CO'S are strongly mapped as they focus on managing email accounts, including composing, sending, receiving, organizing, and filtering emails. They should also understand email etiquette



and best practices for maintaining professional communication online.

**PO6: Innovation, Employability, and Entrepreneurial Skills:**

CO1 CO3 CO4 CO7 are strongly and other are moderately mapped as it focuses on opportunities to apply their internet skills and knowledge in real-world contexts, such as researching topics of interest, collaborating on group projects, conducting online interviews, and participating in online communities and discussions.

**PO7: Multidisciplinary Competence:**

All CO's are strongly mapped as it focuses on Proficiency in managing email accounts, including composing, sending, receiving, organizing, and filtering emails. Students understand email etiquette and best practices for maintaining professional communication online.

**PO8: Value Inculcation through Community Engagement:**

CO2 CO4 CO6 CO7 are strongly mapped as they should also understand the importance of using strong passwords, secure browsing habits, and privacy-enhancing tools.

**PO9: Traditional Knowledge into Modern Application:**

All CO's are strongly mapped as it focuses on providing fundamental concepts and practical's based on the internet, including how it works, its history, key protocols, and the role of internet service providers and navigating the internet using web browsers, search engines, and various online tools and services.

**PO10: Design and Development of System**

CO2 CO5 CO7 are strongly and others moderately mapped as students apply the concepts learned in developing Internet Skills for applications in continuing professional development and new developments.

**PO11: Ethical and Social Responsibility:**

CO4, CO5, and CO6 are strongly mapped as they focus on ethical and social responsibility to understand the role and impact of social media in society and learn how to protect themselves and their personal information online by recognizing and avoiding common online threats such as phishing scams, malware, and identity theft.

**PO13: Teamwork:**

All CO'S are strongly mapped as it involves teamwork in collaborating with, sharing content with, and assigning tasks to colleagues with Google Drive.

**PO14: Area Specific Expertise:**

CO1, CO2, CO3, CO4, CO5, CO6, and CO7 are mapped with Area Specific Expertise in internet skills.

**CBCS Syllabus as per NEP 2020 for S.Y. BBA (Computer Application)  
(2023 Pattern)**

**Name of the Programme** : BBA (Computer Application)

**Programme Code** : UBCA

**Class** : S.Y. BBA (C.A)

**Semester** : IV

**Course Type** : SEC (Practical)

**Course Code** : BCA-276-SEC

**Course Title** : Automation Testing Lab

**No. of Credits** : 02

**No. of Teaching Hours** : 60

**Course Objectives:**

1. To uncover as many as errors (or bugs) as possible in a given product.
2. To demonstrate a given software product matching its requirement specifications.
3. To validate the quality of a software using the minimum cost and efforts.
4. To generate high-quality test cases, perform effective tests, and issue correct and helpful problem reports.
5. To Build the test cases and execute them.
6. To discuss the distinctions between validation testing and defect testing.
7. To understand the essential characteristics of tool used for test automation

**Course Outcomes:**

**By the end of the course, students will be able to:**

**CO1.** Construct and test simple programs.

**CO2.** Understand the use of different Types of Testing and Installation of Software Supporting for Testing.

**CO3.** Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.

**CO4.** Understand and implement concepts on Web Application Testing and tools need to test those application.

**CO5.** Develop java application to interact with TestNG and Maven Component (JDBC Driver).

**CO6.** Understanding Selenium and TestNG tool to perform Automation testing

**CO7.** Design Effective test cases that can uncover ethical defects in the applications.

**CO8.** Demonstrate the importance of testing and its role in need of software development

### Topics and Learning Points

1. Installing Selenium Components.
2. Assignment on methods of Web driver
3. Assignment on methods of Web elements, Locators
4. Assignment on handling web elements available on Google webpage
5. Assignment on how to handle Gmail account and Facebook account.
6. Assignment on Find total no. of links available on web page.
7. Assignment on handling window popup and alert popup
8. Assignment on selecting radio buttons and check box
9. Assignment on handling I frames, Scroll Bar
10. Assignment on handling list box web element
11. Assignment on TestNG Framework– TestNG Installation, TestNG XML Files, TestNGAnnotations

## Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

**Mapping of Program Outcomes with Course Outcomes**

**Class:** SYBBA (C.A) (Sem IV)  
**Course:** Automation Testing Lab

**Subject:** BBA (C.A)  
**Course Code:** BCA-276-SEC

**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)															
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3	3							2				2	
CO2	3	3	3				2			2		3		2	
CO3	3	3		3						2				2	
CO4	3	3					2			2				2	
CO5	3	3			3	3			3	2				2	
CO6	3	3	3		3	3			3	2				2	
CO7	3	3						3		2	3			2	
	3	3								2				2	

**PO1: A Fundamental Knowledge and Coherent Understanding**

Each course outcomes provide students with a solid foundation in programming and testing concepts. CO1 to CO7 emphasize the construction of programs and understanding testing types, which equip students with multidisciplinary knowledge essential for various fields such as Computer Science and Applications, Management, and more.

**PO2: Procedural Knowledge for Skill Enhancement**

Each course outcome fosters a deep procedural understanding of programming and testing practices. For instance, CO1 to CO7 enable students to implement Object-Oriented programming and apply web testing methodologies, enhancing their technical skills in a structured manner.

**PO3: Critical Thinking and Problem-Solving Skills**

The course promotes critical thinking through the design and implementation of programs, as seen in CO1, CO2, and CO6. Students are encouraged to solve problems in real-time scenarios, applying learned concepts to derive solutions, which is fundamental to their future careers.

**PO4: Communication Skills**

Although not directly addressed in every CO, outcomes like CO3 require students to articulate their understanding of Object-Oriented principles clearly. Effective communication of these concepts is vital in team settings and during presentations.

**PO5: Analytical Reasoning Skills**

CO outcomes such as CO5 and CO6 require students to analyze complex testing environments and programming challenges, thereby enhancing their analytical reasoning skills applicable in various business contexts.

**PO6: Innovation, Employability, and Entrepreneurial Skills**

The application of tools like TestNG and Selenium in CO5 and CO6 prepares students for the job market by familiarizing them with industry-standard technologies, promoting employability and fostering innovative thinking.

**PO7: Multidisciplinary Competence**

Through the integration of testing concepts from diverse domains in outcomes like CO2 and CO4, students gain insights into the interconnected nature of knowledge, fostering a broader understanding that transcends disciplinary boundaries.

**PO8: Value Inculcation through Community Engagement**

While community engagement isn't directly highlighted in the COs, the ethical considerations emphasized in CO7 can inspire students to participate in activities that promote social responsibility and community welfare.

**PO9: Traditional Knowledge into Modern Application**

The course outcomes encourage the application of foundational programming knowledge in modern contexts, such as using advanced testing tools outlined in CO5 and CO7, showcasing the relevance of traditional concepts in contemporary practices.

**PO10: Design and Development of System**

All COs, including CO1 through CO8, directly involve the design and development of software solutions, addressing real-world problems. This alignment ensures that students are well-prepared to create effective and efficient systems.

**PO11: Ethical and Social Responsibility**

CO7 focuses on designing ethical test cases, emphasizing the importance of ethics in software development. This outcome aligns well with PO11, which encourages a sense of accountability and responsibility in professional practices.

**PO12: Research-Related Skills**

Through the exploration of different testing types in CO2, students gain insights into research methodologies and ethics, equipping them with essential skills for conducting future research.

**PO13: Teamwork**

While not explicitly mentioned, many course activities likely involve collaborative projects, fostering teamwork skills necessary for success in both academic and professional settings.

**PO14: Area Specific Expertise**

All COs are moderately mapped as the course provides specific knowledge applicable to areas like software development and testing, aligning with PO14 by enabling students to apply relevant concepts in various fields, including Computer Science and Engineering.