



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

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

CBCS Syllabus

SYBBA (C.A.) Semester -III

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 first semester of F.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)**

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
III	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	
Total Credits Semester-III					24
IV	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
Total Credits Semester-IV					22
Cumulative Credits Semester III + Semester IV					46

**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 : III

Course Type : Major Mandatory (Theory)

Course Code : BCA-201-MJM

Course Title : Java Programming

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

1. To learn the syntax and program structures in Java Programming.
2. To understand concepts of object-oriented programming in Java, and apply them in solving problems.
3. To Design and develop GUI applications using Abstract Windowing Toolkit(AWT), Swing and Event Handling.
4. To Develop Proficiency in Java Development Tools
5. To introduce the concepts of exception handling and multithreading.
6. To introduce the design of Graphical User Interface using applets and swing controls.
7. To discuss the implementation of packages and interfaces.

Course Outcomes:

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

- CO1.** Know the different basic concepts of Java programming language.
- CO 2.** Use the Java programming language for various applications developments.
- CO 3.** Able to solve real world problems using OOP techniques.
- CO 4.** Able to understand how to handle exceptions while writing java programs.
- CO 5.** Solve problems using java collection framework and I/O classes.
- CO 6.** Able to develop applets for web applications.
- CO 7.** To enhance problem solving abilities through programming exercises, assignment and projects that challenge student to apply their programming skills to real word problems.

Topics and Learning Points		Teaching Hours
UNIT 1:	<p>Introduction to JAVA</p> <p>1.1 Features of Java</p> <p>1.2 JDK Environment & tools like (java, javac, applet viewer, javadoc, jdb)</p> <p>1.3 OOPs Concepts- Class, Abstraction, Encapsulation, Inheritance, Polymorphism</p> <p>1.4 Difference between C++ and JAVA</p> <p>1.5 Structure of Java program</p> <p>1.6 Data types, Variables, Operators, Keywords, Naming Convention</p> <p>1.7 Decision Making (if, switch), Looping (for, while)</p> <p>1.8 Array</p> <ul style="list-style-type: none"> -Creating an Array Types of Array -One Dimensional Arrays -Two Dimensional Arrays <p>1.9 String</p> <ul style="list-style-type: none"> - Arrays, Methods, StringBuffer Class 	05
UNIT 2:	<p>Classes and Objects</p> <p>2.1 Creating Classes and Objects</p> <p>2.2 Memory Allocation for Objects</p> <p>2.3 Constructor and its type</p> <p>2.4 Implementation of Inheritance Simple, Multilevel,</p> <p>2.5 Interface</p> <p>2.6 Abstract Classes and Methods</p> <p>2.7 Implementation of Polymorphism</p> <p>2.8 Nested and Inner classes.</p> <p>2.9 Modifiers and Access Control</p> <p>2.10 Packages</p> <p>2.11 Java Built in Packages</p>	05
UNIT 3:	<p>Collection</p> <p>3.1 Collection Framework.</p> <ul style="list-style-type: none"> - Interfaces(Collection, List, Set, SortedSet, Enumeration, Iterator, ListIterator) <p>3.2 Classes(LinkedList, ArrayList, Vector, HashSet, TreeSet, Hashtable)</p> <p>3.3 Working with Maps</p> <ul style="list-style-type: none"> 3.3.1 Map Interface 	05

	3.3.2 Map Classes	
UNIT 4:	File and Exception Handling Exception	07
	4.1 Exception Types	
	4.2 Using Try Catch and Multiple Catch	
	- Nested try, throw, throws and finally	
	4.3 Creating User Defined Exceptions, Built in Exception	
	File Handling	
	4.4 Stream	
	- Byte Stream Classes	
	- Character Stream Classes	
	4.5 File IO basics	
	4.6 File Operations	
	- Creating File	
	- Reading File (character, byte)	
	- Writing File (character, byte)	
UNIT 5:	Applet, AWT and Swing Programming	08
	5.1 Introduction	
	5.2 Types Applet	
	5.3 Applet Life Cycle	
	5.4 Applet Classes	
	AWT	
	5.5 Components and Container used in AWT	
	5.6 Layout Managers	
	5.7 Listeners and Adapter classes	
	Swing	
	5.8 Introduction to Swing Component and Container Classes	

References:

1. Programming with JAVA - E Balgurusamy
2. The Complete Reference – JAVA Herbert Schildt
3. Programming in Java, S. Malhotra, S. Chudhary, 2nd edition, Oxford Univ. Press.
4. Java Programming and Object-oriented Application Development, R. A. Johnson,

Website Reference Link:

1. <https://www.javatpoint.com/java-tutorial>
2. <https://www.geeksforgeeks.org/java/>

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes**Class:** SYBBA (C.A) (Sem III)**Subject:** BBA (C.A)**Course:** Java Programming**Course Code:** BCA-201-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								1				2	
CO2		3	3			3				3			3		
CO3			3		3									2	
CO4		3	3							3				2	
CO5	2		3							3					
CO6	2	2				3				3					
CO7	2	3	3		3	2				3			2	2	

PO1: A Fundamental Knowledge and Coherent Understanding:

CO1 is strong and CO5, CO6, and CO7 are moderately mapped as the student's need the knowledge of basic Java syntax and semantics to apply them in building applications that need Java programming constructs.

CO5, CO6, CO7 Moderately mapped as problem analysis is necessary for solving /developing any application using basic Java programming constructs.

PO2: Procedural Knowledge for Skill Enhancement:

CO1, CO2, CO4, CO6, and CO7 are strongly mapped as the students need complete procedural knowledge for a deep understanding of every concept of programming and enhancing the programming subject skills. Students understand the fundamentals of Java syntax and semantics and are fluent in the use of concepts in writing the programs to build applications.

PO3: Critical Thinking and Problem-Solving Skills:

CO2, CO3, CO4, CO5, and CO7 are strongly mapped as problem analysis is necessary for solving /developing any application using appropriate Java programming constructs such as object-oriented programming features, packages, and exception handling and also finding the solutions to the problem. Solve problems using the Java collection framework and I/O classes.

PO5: Analytical Reasoning Skills:

CO3 and CO7 are strongly mapped with the analytical skill for solving real-world problems using OOP techniques and enhancing problem-solving abilities through programming exercises, assignments, and projects that challenge the student to apply their programming skills to real-world problems.

PO6: Innovation, Employability and Entrepreneurial Skills:

CO1, CO2, CO4, CO5, CO6, and CO7 are strongly and CO7 is moderately mapped as students apply the concepts learned in developing GUI-based applications in continuing professional development and new developments. Java is a widely used programming language, it offers career opportunities for professionals with Java skills. Able to develop applets for web applications.

PO10: Design and Development of System:

CO1 is weak and CO2, CO4, CO5, CO7, and CO8 are strongly mapped as students apply the concepts in developing GUI-based applications in continuing professional development and new developments. Students apply the applets-based GUI to develop/solve real-world applications. Students should have complete knowledge of Java and develop the GUI-based application using Swings.

PO13: Teamwork:

CO2 is strongly and CO7 is moderately mapped in the field of software development Students work constructively, cooperatively, effectively, and respectfully as part of a team.

PO14: Area Specific Expertise:

CO1, CO3, CO4, and CO7 are moderately mapped as the students should be able to apply Java programming concepts, theories, and models in the various areas such as game development, and many popular mobile or computer applications after a better understanding of the subject and its contents.

**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	: III
Course Type	: Major Mandatory (Theory)
Course Code	: BCA-202-MJM
Course Title	: Web Technologies
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To impart the design, development and implementation of Dynamic Web Pages.
2. To introduce the fundamentals of Internet, and the principles of web design
3. To learn to write, test, and debug web pages using HTML and JavaScript.
4. To develop web application using various technology.
5. To develop programs for Web using Scripting Languages.
6. To Design and implement dynamic websites with good sense of designing and latest technical aspects.
7. To learn HTML and CSS tags and JavaScript Language programming concepts and techniques.

Course Outcomes:

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

- CO1.** Analyze the web page and identify its elements and attributes.
- CO2.** Create web pages using HTML5 and CSS3.
- CO3.** Build dynamic webpage by the use of JavaScript and PHP.
- CO4.** To construct basic websites using HTML and Cascading Style Sheets.
- CO5.** Understand internet basics, internet protocols and concepts of effective web design.
- CO6.** To create forms and test for data accuracy and debug web pages using different tools.
- CO7.** Get knowledge and skills of project-based experience needed for entry into web application.

Topics and Learning Points		Teaching Hours
UNIT 1: Introduction to Web Development	1.1 What is web app 1.2 Client server Vs Web Server 1.3 Front End & Back end. 1.4 Internet-Basic, Internet Protocols (HTTP, FTP, IP) 1.5 World Wide Web (WWW) 1.6 HTTP Request Message, HTTP Response Message	04
UNIT 2: Introduction to HTML5	2.1 Introduction to HTML5 2.2 Syntax and Document Structure 2.3 Semantic Elements (header, footer, nav, article, section) 2.4 Forms and Input Types 2.5 Audio and Video 2.6 Canvas 2.7 Geolocation 2.8 Drag and Drop 2.9 Responsive Images	10
UNIT 3: CSS 3	3.1 Introduction to CSS 3.2 CSS Syntax and Selectors 3.3 CSS Box Model 3.4 CSS Units 3.5 CSS Colors and Backgrounds 3.6 CSS Text and Fonts 3.7 CSS Layouts (Floats, Flexbox, Grid) 3.8 CSS Positioning 3.9 CSS Responsive Design 3.10 CSS Transitions and Animations	7
UNIT 4: JavaScript	4.1 Introduction to JavaScript, Types of Scripts 4.2 Control and looping structure 4.3 Various Operators in JavaScript 4.4 Array its Types 4.5 Event Handling 4.6 Math, Date and String objects 4.7 DOM Objects 4.8 Form Validation 4.9 Dynamic effect using JavaScript	9

References:

1. JavaScript The Complete Reference 3rd Edition Thomas A.Powell, Fritz Schneider
McGraw Hill Professional,
2. HTML 5 Black Book (Covers CSS3, JavaScript, XML,XHTML, AJAX,PHP,
jQuery)2Ed
3. JavaScript The Complete Reference 3rd Edition (Paperback, Powell Thomas)
4. HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)
5. HTML5 and CSS3 By Elizabeth Castro, Bruce Hyslop

Website Reference Link:

- 1) W3Schools HTML Tutorial: <https://www.w3schools.com/html/>
- 2) CSS Tutorial :<https://www.tutorialspoint.com/css/index.htm>
- 3) Learn Bootstrap Tutorial - JavaTpoint : <https://www.javatpoint.com/bootstrap-tutorial>
- 4) JavaScript Tutorial :<https://www.w3schools.com/js/>
- 5) The Modern JavaScript Tutorial: <https://javascript.info>

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes**Class:** SYBBA (C.A) (Sem III)**Subject:** BBA (C.A)**Course:** Web Technologies**Course Code:** BCA-202-MJM**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

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

PO1: A Fundamental Knowledge and Coherent Understanding:

CO1, CO2, CO4, CO5, and CO7 are strongly mapped as they focus on providing students with a broad understanding of internet basics, protocols, and effective web design concepts, which are fundamental aspects of web development.

PO2: Procedural Knowledge for Skill Enhancement:

CO2, CO3, CO4, CO5, CO6, and CO7 are strongly mapped as they focus on providing procedural knowledge and skills related to web development using various technologies like HTML, CSS, JavaScript, and PHP.

PO3: Critical Thinking and Problem-Solving Skills:

CO1, CO3, and CO7 are strongly mapped as they require students to analyze web pages, which involves critical thinking and problem-solving skills to identify elements and attributes.

PO5: Analytical Reasoning Skills:

CO1, CO6, and CO7 are strongly mapped as they involve analyzing web pages, which requires analytical reasoning skills to evaluate the reliability and relevance of elements and attributes.

PO6: Innovation, Employability and Entrepreneurial Skills:

CO2, CO3, CO4, CO5, CO6, and CO7 are strongly mapped as it focuses on building dynamic web pages using technologies like JavaScript and PHP, which are essential skills for innovation, employability, and entrepreneurship in the web development field.

PO10: Design and Development of System:

CO2, CO3, CO4, CO5, and CO7 are strongly mapped as they focus on constructing basic websites using HTML and CSS, which are essential skills for designing and developing web systems.

PO13: Teamwork:

CO2, CO3, CO4, CO5, and CO7 are strongly mapped as they involve constructing basic websites using HTML and CSS, which can be done collaboratively as part of a team.

PO14: Area Specific Expertise:

CO2, CO4, CO5, and CO7 are strongly mapped and CO3 is moderate as it focuses on building dynamic web pages using technologies like JavaScript and PHP, which are area-specific skills in web development.

**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	: III
Course Type	: Major Mandatory (Theory)
Course Code	: BCA-203-MJM
Course Title	: Software Engineering
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. Define software engineering and its importance in modern technology.
2. Understand the software development life cycle (SDLC) and its various phases.
3. Learn and apply different software development methodologies
4. Understand software architectural patterns and their applications To Understand the challenges and importance of software maintenance.
5. Develop effective teamwork and collaboration skills through group projects and discussions.
6. Enhance written and verbal communication skills to effectively convey ideas, requirements, and technical information.
7. Understand the ethical considerations and responsibilities of software engineers.
8. Develop adaptability and problem-solving skills to tackle new challenges and technologies in software engineering.

Course Outcomes:

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

- CO1.** Understand Software Engineering Fundamentals.
- CO2.** Apply Software Development Processes and Methodologies.
- CO3.** Design and Implement Software Systems.
- CO4.** Collaborate Effectively in Software Development Teams.
- CO5.** Manage Software Projects Successfully.
- CO6.** Prepare and present professional documentation, reports, and presentations related to software engineering projects.

CO7. Plan, organize, and manage software projects by applying project management principles, tools, and techniques.

CO8. Implement software systems using programming languages, frameworks, and tools relevant to software engineering.

Topics and Learning Points		Teaching Hours
UNIT 1: Introduction to Software Engineering	1.1 Definition of Software 1.2 Characteristics of Software 1.3 Definition of Software Engineering 1.4 Need for Software Engineering 1.5 Requirement Engineering and Analysis 1.6 SDLC	03
UNIT 2: Software Models	2.1 Waterfall Model 2.2 RAD Model 2.3 Evolutionary Process Model <ul style="list-style-type: none"> 2.3.1. Spiral Model 2.3.2. Prototype Model 2.4 An Agile View of Process <ul style="list-style-type: none"> 2.4.1. What is Agility? 2.4.2. Features of Agile Process Model 	04
UNIT 3: Requirement Engineering	3.2 Introduction 3.2 Requirement Gathering 3.3 Feasibility Study 3.4 Fact Finding Techniques 3.5 SRS	08
UNIT 4: Analysis and Design Tools	4.1 Decision Tree and Decision Table 4.2 Entity Relationship Diagram (ERD) 4.3 Data Flow Diagram (DFD-Up to 2nd Level) 4.4 Data Dictionary <ul style="list-style-type: none"> 4.4.1. Elements of DD 4.4.2. Advantages and Disadvantages of DD 4.5 Input and Output Design 4.6 Coupling and Cohesion 4.7 Case studies on above topics.	06
UNIT 5: Use Case Driven Object-Oriented Analysis	5.1 Introduction to OOPs Concepts <ul style="list-style-type: none"> 5.1.1. Class and Object 5.1.2. Data Abstraction and Encapsulation 	09

- 5.1.3. Inheritance and Polymorphism
- 5.1.4. Dynamic Binding and Message Passing
- 5.2 Structural Diagram
 - 5.2.1. Class Diagram
 - 5.2.2. Object Diagram
- 5.3 Aggregation, Composition and Generalization
- 5.4 Inheritance, Sub Types and ISA-Hierarchy
- 5.5 Behavioural & Architectural Modelling
 - 5.5.1. Use Case Diagram
 - 5.5.2. Activity Diagram
 - 5.5.3. Sequence Diagram
 - 5.5.4. Collaboration Diagram
 - 5.5.5. Component Diagram
 - 5.5.6 Deployment Diagram
 - 5.5.7 State Chart Diagram
 - 5.5.8 Case studies on above topics

References:

1. Software Engineering-Rogers. Pressman.
2. SADSE (System Analysis Design)-Prof. Khalkar and Prof. Parthasarathy.
3. Software Development from A to Z: A Deep Dive Into All the Roles Involved in the Creation of Software Publication : APress Publication Author: Olga Filipova & Rui Vilão
4. Software Engineering_ Architecture-driven Software Development Publication : Morgan Kaufmann Author :Richard Schmidt
5. Software Engineering Practice: A Case Study Approach Publication :CRC Press(A Chapman & Hall Book)Publication Author :Massood Towhidnejad, Thomas B. Hilburn

Website Reference Link:

1. <https://www.guru99.com/software-engineering-tutorial.html>
2. <https://www.javatpoint.com/software-engineering-tutorial>
3. https://www.tutorialspoint.com/software_engineering/index.htm

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes**Class:** SYBBA (C.A) (Sem III)**Subject:** BBA (C.A)**Course:** Software Engineering**Course Code:** BCA-203-MJM**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	Programme Outcomes (POs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3				2						2		3	
CO2	3	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	3		
CO7		3	3		3									3	
CO8	3	3	3		3										

PO1: A Fundamental Knowledge and Coherent Understanding:

CO1, CO2, CO3, CO6, and CO8 are strongly mapped as students will be able to understand Software Engineering Fundamentals and knowledge.

PO2: Procedural Knowledge for Skill Enhancement:

CO1, CO2, CO5, CO7, and CO8 are strongly mapped as students will be able to get procedural knowledge for skill enhancement using knowledge and Software Development Processes and Methodologies.

PO3: Critical Thinking and Problem-Solving Skills:

CO2, CO7, and CO8 are strongly mapped as students will be able to have knowledge about critical thinking and problem-solving skills while collecting a basic requirement of software systems using Processes and Methodologies.

PO4: Communication Skills:

CO5 and CO6 are strongly mapped as students will be able to work in a team to get requirements about software systems, Manage Software Projects increase their communication skills while working in a team.

PO5: Analytical Reasoning Skills:

CO2, CO4, CO5, CO7, and CO8 are strongly mapped as they involve analyzing software projects by applying project management principles, tools, and techniques. Also implement software systems using programming languages, frameworks, and tools relevant to software engineering.

PO6: Innovation, Employability and Entrepreneurial Skills:

CO3, CO4, CO5, and CO6 are strongly and CO1 is moderately mapped as students will be able to take innovative ideas while making software. He can get job opportunities and also he may become an entrepreneur in developing software systems.

PO10: Design and Development of System:

CO3, CO4, CO5, and CO6 are strongly mapped as students will be able to get deep knowledge for the design and development of system software in the real-life world. Prepare and present professional documentation, reports, and presentations related to software engineering projects.

PO12: Research-Related skills:

CO6 is strongly and CO1 is moderately mapped as Software Engineering helps to Understand Fundamentals. It helps to improve research-related skills like Preparing and presenting professional documentation, reports, and presentations related to software engineering projects

PO13: Teamwork:

CO3, CO4, CO5, and CO6 are strongly mapped as a student will be able to get knowledge about working in a team to collect requirements related to software engineering.

PO14: Area Specific Expertise:

CO1, CO4, and CO7 are strongly mapped as students will be able to work in a team to get requirements about software systems, the student will be able to increase his communication skills while working in a team to become an area-specific expertise.

**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	: III
Course Type	: Major Mandatory (Practical)
Course Code	: BCA-204-MJM
Course Title	: Practical I
No. of Credits	: 02
No. of Teaching Hours	: 60

Course Objectives:

1. To design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling.
2. To write programs for solving real world problems using java collection frame work
3. To write GUI programs using swing controls in Java.
4. To discuss the implementation of packages and interfaces.
5. To develop a working knowledge of HTML, CSS, and JavaScript syntax and semantics
6. To make web pages accessible and well-formed.
7. To understand fundamental programming concepts such as variables, data types, operators, and control structures in JavaScript.
8. To manipulate the Document Object Model (DOM) to dynamically update HTML and CSS based on user interactions.

Course Outcomes:

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

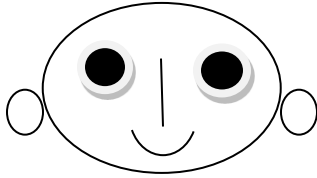
- CO1.** Develop Software in the Java programming language.
- CO2.** Solve problems using java collection framework and I/O classes.
- CO3.** Able to develop applets for web applications.
- CO4.** To design GUI based applications
- CO5.** Develop web pages using the HTML and CSS features with different layouts as per need of applications.
- CO6.** Handle various events in JavaScript to respond to user interactions effectively.
- CO7.** Understand CSS selectors and can apply them effectively to style specific elements.
- CO8.** Interact with the DOM to dynamically update web page content based on user actions.

Topics and Learning Points**Java Programming Assignments**

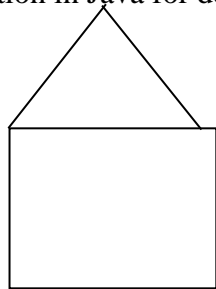
1. Write a java program to accept n names of cities from user and display them in descending order.
2. Define a class Student with attributes rollno and name. Define default and parameterized constructor. Override the toString() method. Keep the count of Objects created. Create objects using parameterized constructor and Display the object count after each object is created.
3. Write a java program to display the contents of a file in reverse order.
4. Write a java program to accept Employee name from the user and check whether it is valid or not. If it is not valid then throw user defined Exception "Name is Invalid" otherwise display it.
5. Write a java program to accept list of file names through command line and delete the files having extension ".txt". Display the details of remaining files such as File Name and size.

6. Write a java program to copy the contents of one file into the another file, while copying change the case of alphabets and replace all the digits by '*' in target file.
7. Define an abstract class Shape with abstract methods area() and volume(). Write a java program to calculate area and volume of Cone and Cylinder
8. Write a java program that displays the number of characters, lines & words from a file.
9. Write a java program to accept a number from the user, if number is zero then throw user defined Exception "Number is 0" otherwise calculate the sum of first and last digit of a given number (Use static keyword).
10. Write a package for Games in Java, which have two classes Indoor and Outdoor. Use a function display () to generate the list of players for the specific games. (Use Parameterized constructor, finalize() method and Array Of Objects)
11. Define an Interface Shape with abstract method area(). Write a java program to calculate an area of Circle and Sphere.(use final keyword)
12. Define an Interface Shape with abstract method area(). Write a java program to calculate an area of Circle and Sphere.(use final keyword)
13. Write a java program to accept the details of n Cricket Players from user (Player code, name, runs, innings- played and number of times not out). The program should contain following menus:
 - a. -Display average runs of a single player.
 - b. -Display average runs of all players. (Use array of objects, Method overloading and static
 - c. keyword)
14. Define an Employee class with suitable attributes having getSalary() method, which returns salary withdrawn by a particular employee. Write a class Manager which extends a class Employee, override the getSalary() method, which will return salary of manager by adding traveling allowance, house rent allowance etc.
15. Write a java Program to accept 'n' no's through the command line and store all the prime no's and perfect no's into the different arrays and display both the arrays.
16. Write a java program to read n Students names from user, store them into the ArrayList collection. The program should not allow duplicate names. Display the names in ascending order.
17. Write a java program to accept n employee names from user, store them into the Linked List class and display them by using.
 - a. Iterator Interface
 - b. ListIterator Interface
18. Write a java program to accept the details of 'n' employees (ENAME ,Salary) from the user, store them into the Hash table and displays the Employee Names having maximum Salary.
19. Design a screen in Java to handle the Mouse Events such as MOUSE_MOVED and MOUSE_CLICK and display the position of the Mouse_Click in a TextField.

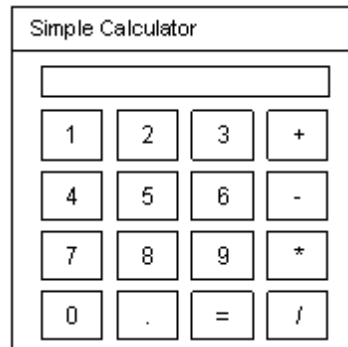
20. Write a java program to display “Hello Java” with settings Font- Georgia, Foreground color- Red, background color – Blue on the Frame (Use Label)
21. Write an applet application in Java for smile face.



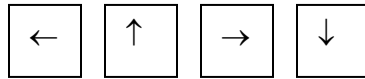
22. Write an applet application in Java for designing Temple.



23. Create a calculator with functionality in an Applet.



24. Write a Java program which will create a frame if we try to close it, it should change its color and it remains visible on the screen (Use swing).
25. Write a Java program to design a screen using Awt that will take a user name and password. If the user name and password are not same, raise an Exception with appropriate message. User can have 3 login chances only. Use clear button to clear the TextFields.
26. Write a Java Program to accept the details of Employee (Eno, EName,Sal) from the user and display it on the next Frame. (Use AWT)
27. Write an application in Java using Awt to display 4 X 4 squares on the screen. One of the block will be active with black color. All other blocks should be filled with blue color. Provide command buttons as follows to move the active cell. The active cell should be changed only if it is within the boundary of the squares otherwise give the beep.



28. Write a Java program which will create a frame if we try to close it, it should change its color and it remains visible on the screen (Use swing).
29. Write a java program to design a following GUI (Use Swing).

Web Technology Assignments

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 containa 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

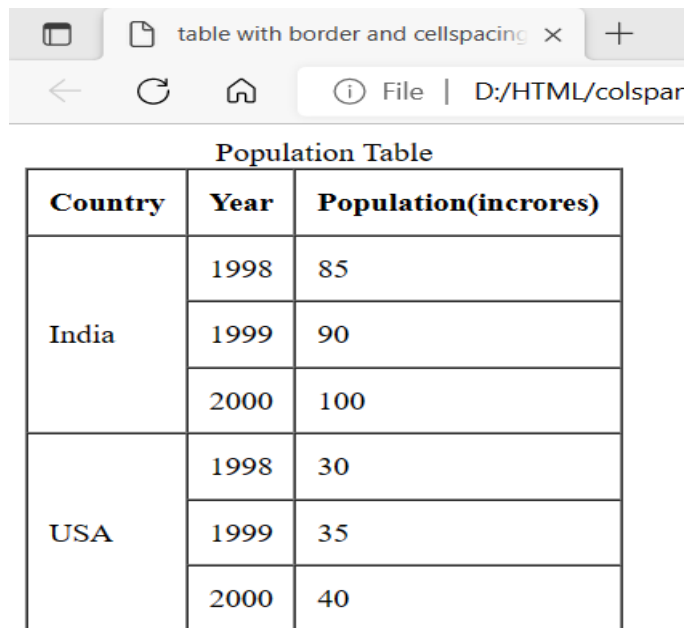
- i. HTML
- ii. CSS
- iii. JS

8. Write the HTML code which generates the following output

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

Milk

9. Write HTML code to generate following Output.



The screenshot shows a web browser window with a single tab titled "table with border and cellspacing". The address bar shows the file path "D:/HTML/colspar". Below the browser window, a table titled "Population Table" is displayed. The table has three columns: "Country", "Year", and "Population(incrores)". The data is as follows:

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).



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.
22. Write a JavaScript program to accept a number from user and calculate the cube of the number.
23. Write JavaScript program to print multiplication table.
24. Write a JavaScript program to accept a number from user and calculate and display its sum of digits.
25. Write a JavaScript code to check number is Perfect or not.
26. Write a javascript function that accept three numbers and display the larger number.
27. Write a JavaScript program to create four color buttons on the web page. Clicking on button will change the background color of web page.
28. Write a JavaScript to create an image slider (use array to store images).
29. Write a javascript validation program to check any of the field should not be empty.
30. Write a JavaScript program to compare the values of password and confirm password field and display message according also perform the validation to check any of the field should not be empty.
31. Write a JavaScript Program to accept user name and password from an user, if Username and Password is same then display his score card on the next page as shown below.

Tuljaram Chaturchand College

enter the username:

enter the password:

Student Name: Radha Seat No:10

s.no	subject name	internal marks	external marks	total
301	C++	15	50	100
302	wt	17	55	85
303	SE	17	45	95

32. Write a JavaScript program to design student registration form and perform following validation:
- Check all fields should not contain a null value
 - Check name field contains only alphabets
 - Mobile No. field should be of 10 digits
 - Pin code field should be of 06 digits.
33. Write a JavaScript program to perform validations on email.

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes

Class: SYBBA (C.A) (Sem III)
Course: Practical I

Subject: BBA (C.A)
Course Code: BCA-204-MJM

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

Course Outcomes	Programme Outcomes (POs)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3	3			3				3			3	3	
CO2		3	3		3	3							3	3	
CO3		2	3			3				3			3	3	
CO4		3	3			3				3			3	3	
CO5	3	3				3				3			3	3	
CO6	3		3		3					3					
CO7	3	3	3		3										
CO8	3	3			3					3					

PO1: A Fundamental Knowledge and Coherent Understanding:

CO1, CO5, CO6, CO7, and CO8 are strongly mapped to acquire practical knowledge in different languages like Java, HTML, and CSS. It focuses on developing software in the Java programming language. Develop web pages using the HTML and CSS features with different layouts as per the needs of applications.

PO2: Procedural Knowledge for Skill Enhancement:

CO1, CO2, CO3, CO4, CO5, CO7, and CO8 are strongly mapped as focuses on problem-solving using Java collection framework and I/O classes. Students should be able to acquire complete procedural knowledge for a deep understanding of every subject and to enhance their subject skills.

PO3: Critical Thinking and Problem-Solving Skills:

CO1, CO2, CO3, CO4, CO6, and CO7 are strongly mapped as it focuses on developing applets for web applications. It involves critical thinking and problem-solving in real-life situations. Developing web pages requires analytical reasoning.

PO5: Analytical Reasoning Skills:

CO2, CO6, CO7, and CO8 are strongly mapped as a focus on developing web pages using HTML and CSS with different layouts. It enhances procedural knowledge and skills in web development. Handling events in JavaScript involves innovation and entrepreneurial skills.

PO6: Innovation, Employability and Entrepreneurial Skills:

CO1, CO2, CO3, CO4, and CO5 are strongly mapped as a focus on handling events in JavaScript to respond to user interactions. It create effectively responding to user interactions. Develop web pages using HTML and CSS features with different layouts as per the needs of applications.

PO10: Design and Development of System:

CO1, CO3, CO4, CO5, CO6, and CO8 are strongly mapped as a focus on Designing and developing GUI applications for real-world problems. Designing and developing interactive web solutions using JavaScript, CSS, and applet. Applying ethical standards in software development using Java collection framework and I/O classes.

PO13: Teamwork:

CO1, CO2, CO3, CO4, and CO5 are strongly mapped as focuses the students should be able to able to work constructively, cooperatively, effectively, and respectfully as part of a team.

PO14: Area Specific Expertise:

CO1, CO2, CO3, CO4, and CO5 are strongly mapped as Applying software development concepts, Java collection framework and I/O classes, GUI design concepts, JavaScript, and CSS in practical scenarios.

**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** : III**Course Type** : Minor (Theory)**Course Code** : BCA-211-MN**Course Title** : Computer Literacy**No. of Credits** : 02**No. of Teaching Hours** : 30**Course Objectives:**

1. To acquire knowledge on editor, spread sheet, slide preparation.
2. To train the students in Microsoft Office which has different components like MS Word, MS Excel and Power point.
3. To improve creative thinking in presentation software.
4. To impart knowledge about the Internet, web surfing and E-mail.
5. To provide practical training of office automation tools, Internet and internet tools.
6. To develop knowledge of Google Drive which is file storage service that allows users to create, share, and store files from anywhere

Course Outcomes:**By the end of the course, students will be able to:****CO1.** State the characteristics of computer and identify the components of computer system.**CO2.** Understand various office tools and strategies to execute efficient and structured office work.**CO3.** Proficiency in using word processing software. This includes understanding features such as text formatting, spell check, inserting image and creating pages.**CO4.** Proficiency in using email for communication. Student should understand email etiquettes, attachment handling and basic email security practices.**CO5.** Select and use the appropriate software application to complete a particular task such as a word Processing skills.

CO6. Develop the strong ability and execute the collaborative work using google drive.

CO7. Ability to organize to manage files and folders efficiently on a computer.

Topics and Learning Points		Teaching Hours
UNIT 1: Introduction to MS-Office		06
	1.1 MS-Word:	
	1.1.1 Features of MS-Word	
	1.1.2 MS-Word Window components,	
	1.1.3 working with formatted text	
	1.2 Introduction to MS-Excel & Its Features	
	1.2.1 Applications of MS-Excel	
	1. 2.2 Features of MS-Excel	
	1.3 MS-PowerPoint	
	1.3.1 Applications of MS-PowerPoint	
	1.3.2 Features of Power Point,	
	1.3.3 MS-PowerPoint: Uses, components of slide	
UNIT 2: Office tools-Processing		10
	2.1 Introduction	
	2.2 Objective	
	2.3 Word Processing Basics	
	2.4 Opening Word Processing Package	
	2.5 Title Bar, Menu Bar, Toolbars & Sidebar	
	2.6 Creating a New Document	
	2.7 Opening and Closing Documents	
	2.8 Save and Save As, Print Document	
	2.9 Using The Help	
	2.10 Page Setup, Print Preview, Printing of Documents, PDF file and Saving a Document as PDF file	
	2.11 Document manipulation & Formatting, Text Selection, Cut, Copy and Paste, Font, Color, Style and Size selection, Alignment of Text, Undo & Redo, Spelling & Grammar, Shortcut Keys	
UNIT 3: E-mail		09
	3.1 Introduction to Gmail Window	
	3.2 How to add contacts (E-Mail)/Edit contacts	
	3.3 Details of Compose dialog box fields- To, CC, BCC, Subject etc., Compose an e-mail, add attachment and add signature, How to add more than one recipients at a time (from excel file)+Comma, Separated list(notepad)	
	3.4 e-mail Formatting	
	3.5 How to send Reply/Forward the mail	
	3.6 e-mail Settings: download (set directory/drive other than C drive),	

signature etc. Inbox: all options	
3.7 Managing E-mail	
UNIT 4: Collaborative work using Drive	5
4.1 Folder(Creating new Folder)	
4.2 File Upload, Folder Upload	
4.3 Creating, sharing and collaborative working with : Google Sheet and Google Doc, Google Form	

References:

1. P.K. Sinha, "Computer Fundamentals", BPB publications, 8th Edition
2. MICROSOFT WORD & POWERPOINT FOR BEGINNERS & POWER USERS 2021: The Concise Microsoft Word & PowerPoint A-Z Mastery Guide for All Users Paperback – May 11, 2021 by Tech Demystified (Author)

Website Reference Link:

1. <https://support.microsoft.com/>
2. <http://nptel.ac.in>
3. <https://swayam.gov.in>

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes**Class:** SYBBA (C.A) (Sem III)**Subject:** BBA (C.A)**Course:** Computer Literacy**Course Code:** BCA-211-MN**Weightage:** 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

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

PO1: A Fundamental Knowledge and Coherent Understanding:

CO1, CO2, CO3, CO4, CO6, and CO7 are strongly mapped as knowledge about computer literacy so some are strongly as well as moderately mapped. It helps to acquire knowledge about the characteristics and components of a computer system and contributes to acquiring broad knowledge.

PO2: Procedural Knowledge for Skill Enhancement:

Procedural knowledge refers to knowledge about how to perform specific tasks or actions, involving practical skills and step-by-step procedures. CO2, CO3, CO4, CO5, CO6, CO7 are strongly mapped whereas CO1 is moderately mapped.

PO3: Critical Thinking and Problem-Solving Skills:

Critical thinking means Identifying a problem or issue. Create inferences on why the problem exists and how it can be solved. CO3, CO5 & CO6 are strongly mapped whereas CO2 is moderately mapped.

PO4: Communication Skills:

CO4 is strongly mapped as understanding email etiquette, attachment handling, and basic email security practices is essential for effective communication. Proficiency in using email for communication. Students should understand email etiquette, attachment handling, and basic email security practices.

PO5: Analytical Reasoning Skills:

Analytical reasoning is a skill based on critical thinking, where you use logic to answer complex questions so CO2, CO3, CO5, CO6, and CO7 are strongly mapped are strongly mapped. Select and use the appropriate software application to complete a particular task such as word Processing skills.

PO6: Innovation, Employability, and Entrepreneurial Skills:

CO2 and CO5 are strongly mapped with PO because computer skills are used for innovation, employability, and entrepreneurial skills.

PO7: Multidisciplinary Competence:

Multidisciplinary competence means the ability and willingness of students to apply their knowledge in their professional activities so CO1 and CO4 are strongly and moderately mapped with this PO. Proficiency in using email for communication contributes to acquiring broad multidisciplinary knowledge.

PO11: Ethical and Social Responsibility:

CO4 is strongly mapped as using email, and word processing software for ethical and responsible communication.

PO14: Area Specific Expertise:

CO2, CO3, CO4, CO5, and CO6 are strongly mapped because these COs provide skills that expertise in the computer area.

**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	: III
Course Type	: Minor (Practical)
Course Code	: BCA-212-MN
Course Title	: Computer Literacy Lab
No. of Credits	: 02
No. of Teaching Hours	: 60

Course Objectives:

1. Learn to create, format, edit, and manage various types of documents, including reports, memos, letters, spreadsheets, presentations, and emails.
2. To provide practical training of office automation tools, Internet and internet tools.
3. To provide practice oriented rather than regular class room teaching.
4. To apply theoretical knowledge to real-world scenarios through hands-on projects, case studies, and simulations that simulate workplace environments and challenges.
5. Gain a comprehensive understanding of web browsers, including their features, functionalities, and common terminology.
6. To organize, upload, download, rename, move, and delete files and folders within Google Drive.
7. To develop skills in collaborating with others in real-time on documents, spreadsheets, presentations, and forms using Google Drive's collaborative features.
8. Understand how to manage downloads within web browsers, including initiating downloads, monitoring download progress, and accessing downloaded files.

Course Outcomes:

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

CO1. Demonstrate proficiency in using office automation tools such as Microsoft Office Suite, Google Workspace, or similar software to create, edit, and manage various types of documents, spreadsheets, presentations, and emails.

CO2. Organize, store, retrieve, and share documents efficiently using office automation tools, demonstrating understanding of file management principles and best practices.

CO3. Perform basic data analysis tasks, including data entry, sorting, filtering, and visualization using spreadsheet software, and interpret results to make informed decisions.

CO4. Understand how to track changes, review revision history, and restore previous versions of files in Google Drive.

CO5. Collaborate with, share content with, and assign tasks to colleagues with Google Drive.

CO6. Understand the fundamental concepts of email communication, including composing, sending, receiving, replying, forwarding, and organizing emails.

CO7. Become proficient in using web browsers to navigate the internet, including entering URLs, using bookmarks, navigating back and forward, and refreshing pages.

Topics and Learning Points

1. Create a document to write a letter to the DM&HO of the district complaining about Hygienic conditions in your area.
2. Create a document to share your experience of your recent vacation with family.
3. Create a document to send a holiday intimation to all the parents at time about Dasara Vacation.
4. Create a document to create Time Table of you class using tables.
5. Create a worksheet with you class marks displaying total, average, top marks in the class and least marks in the class.
6. Create a Worksheet with employee no, name, job, salaries of 10 employees, calculate DA, TA, HRA, Gross Salary and Net Salary.
 - i) Find the sum of HRA's of Total employees.
 - ii) Find the average DA
 - iii) Display the Maximum salary of the employee.
7. Prepare a chart with height and weights of you class mates in at least 3 types of charts.
8. Demonstrate the use of Filter with the attendance data of your class.
9. Prepare a presentation with your achievements and experiences in College.
10. Create a Presentation of your organization with pictures, clip arts and animations
11. Design a visiting card for managing director of a company as per the following specification.
 - i) Size of visiting card is $3\frac{1}{2} \times 2$
 - ii) Name of the company with big font
 - iii) Phone number, Fax number and E-mail address with appropriate symbols.
 - iv) Office and Residence addresses separated by new line.
12. Create a table with following columns and display the result in separate cells for the following
 - i) Emp Name, Basic pay, DA, HRA, Total salary.
 - ii) Sort all the employees in ascending order with the name as the key
 - iii) Calculate the total salary of the employee
 - iv) Calculate the Grand total salary of the employee
 - v) Find highest salary and
 - vi) Find lowest salary.
13. Prepare an advertisement to company requiring software

professional with the following

- i) Attractive page border
 - ii) Design the name of the company using WordArt
 - iii) Use at least one clipart.
 - iv) Give details of the company (use bullets etc.)
 - v) Give details of the Vacancies in each category of employee's (Business manager, Software engineers, System administrators, Programmers, Data entry operators) qualification required.
14. Create a letter head of a company with the following specifications
- i) Name of the company on the top of the page 2 with big font and good style
 - ii) Phone no, Faxno and E-mail address with symbols.
 - iii) Main products manufactured by the company
 - iv) Slogans if any should be specified in bold at the bottom.
15. Create two pages of curriculum vitae of a graduate with the following specifications
- i) Table to show qualifications with proper headings
 - ii) Appropriate left and right margins
 - iii) Format $\frac{1}{2}$ page using two-column approach about yourself
 - iv) Name on each page at the top right side
 - v) Page no. in the footer on the right side.
16. Write a macro format document as below
- i) Line spacing "2" (double)
 - Paragraph indent of 0.1
 - Justification formatting style
 - Arial font and Bold of 14pt-size.
17. Create a letter as the main document and create 10 records for the 10 persons Use mail merge to create letter for selected persons among 10.
18. Create an electronic spread sheet in which you enter the following decimal numbers and convert the number to octal, Hexadecimal and binary numbers and vice-versa.
 Decimal Numbers: 35, 68, 95, 78, 165, 225, 355, 375, 465
 Binary Numbers: 101, 1101, 11101, 11111, 10001, 11101111
19. Calculate the net pay of the employees following the conditions below.

	A	B	C	D	E	F	G	H	I
1	Employee Number	Employee Name	Basic pay	DA	HRA	GPF	Gross Pay	Income tax	Net pay
2									

- DA: - 16% of the basic pay if Basic pay is greater than 20000 or else 44%.
- HRA: - 15 % of the Basic pay subject to maximum of Rs.4000.

- GPF: -10% of the basic pay.
- INCOMETAX:-10% of basic If Basic pay is greater than 20000.
- Find who is getting highest salary & who is getting lowest salary?

20. The ABC Company shows the sales of different products for 5 years. Create BAR Graph, 3D and Pie chart for the following.

A	B	C	D	E	F
S. No.	Year	Pro1	Pro2	Pro3	Pro4
1	1989	1000	800	900	1000
2	1990	800	80	500	900
3	1991	1200	190	400	800
4	1992	400	200	300	1000
5	1993	1800	400	400	1200

21. Create a suitable examination database and find the sum of the marks (total) of each student and respective class secured by the student.
- ✓ Pass – if marks in each subject ≥ 35
 - ✓ Distinction- if average ≥ 75
 - ✓ First class - if average ≥ 60 but < 75
 - ✓ Second class – if average ≥ 50 but < 60
 - ✓ Third class – if average ≥ 35 but < 50
 - ✓ Fail: if marks in any subject < 35

22. Enter the following data into the sheet.

Name	Department	Salary
Anusha	Accounts	12000
Rani	Engineering	24000
Lakshmi	Accounts	9000
Purnima	Marketing	20000
Bindu	Accounts	4500
Tejaswi	Accounts	11000
Swetha	Engineering	15000
Saroja	Marketing	45000
Sunitha	Accounts	5600
Sandhya	Engineering	24000
arika	Marketing	8000

- Extract records for department in Accounts and Salary > 10000
- Sort the data by salary with the department using “sort commands”.
- Calculate total salary for each department using Subtotals

23. Enter the following data into the sheet.

	Raju	Rani	Mark	Rosy	Ismail	Reshma
English	76	89	43	51	76	87
2ndLang	55	85	78	61	47	33
Maths	65	82	34	58	52	65
Computers	45	91	56	72	49	56
Human Values	51	84	54	64	32	64

Apply the conditional formatting for marks

- 35 below Red
- 35 to 50 Blue
- 51 to 70 Green
- 71 to 100 Yellow

24. Create a presentation using templates.
25. Create a Custom layout or Slide Master for professional presentation.
26. Create a presentation with slide transitions and animation effects.
27. Create a table in PPT and apply graphical representation

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes

Class: SYBBA (C.A) (Sem III)
Course: Computer Literacy Lab

Subject: BBA (C.A)
Course Code: BCA-212-MN

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

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

PO1: A Fundamental Knowledge and Coherent Understanding:

CO2, CO3, CO4, CO6, and CO7 are strongly and CO1 and CO5 are moderately mapped as they focus on providing students with a broad understanding of Proficiency in using office automation tools contributing to acquiring broad multidisciplinary knowledge and understanding different educational domains. Organizing and managing documents efficiently, and performing data analysis tasks contribute to acquiring broad knowledge.

PO2: Procedural Knowledge for Skill Enhancement:

CO2, CO3, CO4, CO6, and CO7 are strongly and CO1 are moderately mapped as they focus on providing procedural knowledge and skills related to Collaborating and sharing content with colleagues using Google Drive demonstrates procedural knowledge and skill enhancement.

PO3: Critical Thinking and Problem-Solving Skills:

CO3 and CO4 are strongly and CO5 are moderately mapped as tracking changes and managing revision history is part of understanding file management principles. Assigning tasks and managing shared content is part of understanding file management principles.

PO5: Analytical Reasoning Skills:

CO2 and CO3 are strongly mapped as Data visualization and interpretation are crucial for analytical reasoning.

PO6: Innovation, Employability, and Entrepreneurial Skills:

CO1 and CO4 are moderately mapped as they focus on proficiency in using office automation tools contributing to acquiring broad multidisciplinary knowledge and understanding different educational domains. Organizing and managing documents efficiently, and performing data analysis tasks contribute to acquiring broad knowledge.

PO7: Multidisciplinary Competence:

CO1 and CO4 are moderately mapped as they focus on Proficiency in using web browsers as a part of using office automation tools effectively. Efficiently storing and retrieving documents using office automation tools is part of using web browsers to navigate the internet.

PO10: Design and Development of System:

CO5 is moderately mapped as it focuses on collaborating with, sharing content with, and assigning tasks to colleagues with Google Drive.

PO13: Teamwork:

CO5 is strongly mapped as it involves teamwork in collaborating with, sharing content with, and assigning tasks to colleagues with Google Drive.

PO14: Area Specific Expertise:

CO3, CO5, CO6, and CO7 are strongly mapped as applying file management principles, data analysis concepts, collaboration, and sharing concepts in practical scenarios.

**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	: III
Course Type	: Open Elective (Theory)
Course Code	: BCA-216-OE
Course Title	: Internet Skills & Applications
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. Discuss what the Internet is
2. Discuss the history of the Internet.
3. Identify resources available on the Internet.
4. Define e-mail, newsgroups, chats, and web
5. Discuss Netiquette.
6. Describe different ways to access the Internet.
7. Browse the Web.

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

CO1. Gain a solid understanding of fundamental concepts related to the internet, including how it works, its history, key protocols.

CO2. Effectively navigate the internet using web browsers, search engines, and various online tools and services.

CO3. Develop advanced search skills and identify credible sources of information online.

CO4. Proficient in managing email accounts, including composing, sending, receiving, organizing, and filtering emails. Students understand email etiquette and best practices for maintaining professional communication online.

CO5. Understand the role and impact of social media in society, as well as how to use various

social media platforms responsibly and effectively.

CO6. 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. They should also understand the importance of using strong passwords, secure browsing habits, and privacy-enhancing tools.

CO7. Develop skills in using online communication and collaboration tools, such as video conferencing platforms, messaging apps, and cloud-based productivity suites.

CO8. 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.

Topics and Learning Points		Teaching Hours
UNIT 1:	Introduction to the internet	03
	1.1 Defining and describing the Internet	
	1.2 Brief History	
	1.3 Discussing the future of the Internet	
UNIT 2:	Internet Resources	10
	2.1 . Email	
	1. Parts of email	
	2. Email software	
	3. Web-based email	
	4. Email address	
	5. Listservs	
	2.2 Newsgroups	
	1. Newsgroups names	
	2. Newsgroups readers	
	2.3 Chat rooms	
	2.4 Conferencing	
	2.5 Games	
	2.6 File transfer protocol	
	2.7 Telnet	
	2.8 Gopher	
	2.9 World Wide Web	
UNIT 3:	Netiquette	05
	3.1 Behaviour on the Internet	
	3.2 Flame and Spam	
	3.3 Safety	
UNIT 4:	Accessing the Internet	06
	4.1 Types of access	

- 4.2 Online services
- 4.3 Internet services providers
- 4.4 How and where to look for the service

UNIT 5: Browsing the Web**08**

- 5.1 Hypertext and hyperlinks
- 5.2 Using browsers
- 5.3 Uniform resource locator
- 5.4 Following links
- 5.5 Returning to the home page
- 5.6 Changing the home page
- 5.7 Favourites and Bookmark
- 5.8 Cookies

References:

- 1) The Internet Book by Douglas E.Comer (PHI Publication).
- 2) Internet And Introduction, CISTens School of computing (TMH Publication).
- 3) The Internet: A User's Guide" by Gene K. Chase
- 4) Internet Basics for Beginners" by Alan D. Simpson
- 5) Internet 101: A Beginner's Guide to the Internet and World Wide Web" by Michael Miller
- 6) Internet for Beginners: Your Ultimate Guide To The Web" by Vlad Gemstone
- 7) Internet Basics in Simple Steps" by Greg Holden

Website Reference Link:

- 1) <https://www.javatpoint.com/internet>
- 2) <https://www.geeksforgeeks.org/introduction-to-internet/>

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes**Class:** SYBBA (C.A) (Sem III)**Subject:** BBA (C.A)**Course:** Internet Skills & Applications**Course Code:** BCA-216-OE**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	
CO2	2	3							2					3	
CO3		3	3											3	
CO4	3	3		3			3				3			3	
CO5	3							3			3			3	
CO6	3	3						3			3			3	
CO7	3	2		2	3			3						3	
CO8	3	3	2	2	2	2		2							

PO1: A Fundamental Knowledge and Coherent Understanding:

CO1, CO2, CO4, CO5, CO6, CO7, and CO8 are strongly mapped as they focus on providing fundamental concepts related to the internet, including how it works, its history, key protocols (such as HTTP, TCP/IP), and the role of internet service providers (ISPs)

PO2: Procedural Knowledge for Skill Enhancement:

CO1, CO2, CO3, CO4, CO6, and CO8 are strongly and CO7 is moderately mapped as it Focuses on navigating the internet using web browsers, search engines, and various online tools and services. This includes skills such as opening and closing tabs, bookmarking pages, and using browser features efficiently.

PO3: Critical Thinking and Problem-Solving Skills:

CO3 is strongly and CO8 is moderately mapped 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:

CO4 is strong and CO7 and CO8 are mapped as they focus on online communication and collaboration tools, such as video conferencing platforms, messaging apps, and cloud-based productivity suites. They should be able to communicate and collaborate with others effectively in virtual environments

PO5: Analytical Reasoning Skills:

CO7 and CO8 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:

CO8 is 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:

CO4 is 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:

CO5, CO6, and CO7 are strongly and CO8 is moderately mapped as it focuses on Learning how to protect themselves and their personal information online by recognizing and avoiding common online threats such as phishing scams, malware, and identity theft. They should also understand the importance of using strong passwords, secure browsing habits, and privacy-enhancing tools.

PO9: Traditional Knowledge into Modern Application:

CO2 is strongly mapped as it focuses on providing fundamental concepts related to 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.

This includes skills such as opening and closing tabs, bookmarking pages, and using browser features efficiently.

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. They should also understand the importance of using strong passwords, secure browsing habits, and privacy-enhancing tools.

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	: III
Course Type	: VSC (Theory)
Course Code	: BCA-221-VSC
Course Title	: Software Testing & Automation
No. of Credits	: 02
No. of Teaching Hours	: 30

Course Objectives:

1. To understand the basics of Software Testing.
2. To understand how to test bugs in Software.
3. To learn how to do the Testing and Planning effectively.
4. To build test cases and execute them.
5. To understand the basic of quality software and quality factors.
6. Analysis of various testing methodologies and procedure to design test cases.
7. To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.

Course Outcomes:

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

- CO1.** Understand the basic concepts of software testing and the need for software testing
- CO2.** Design Test planning and different activities involved in test planning
- CO3.** Design effective test cases that can uncover critical defects in the application
- CO4.** Carry out advanced types of testing.
- CO5.** To understand the Automation testing tools: Selenium and TestNG
- CO6.** Analyze requirements to determine appropriate testing strategies.
- CO7.** Apply a wide variety of testing techniques in an effective and efficient manner.

Topics and Learning Points		Teaching Hours
UNIT 1:	Software Testing	06
	1.1 Introduction, Nature of Errors,	
	1.2 Testing Objectives	
	1.3 Testing Principles	
	1.4 Testing Fundamentals,	
	1.5 Software Testing Life Cycle	
	1.6 Bug Life Cycle	
UNIT 2:	Approaches to Testing –Testing Methods	04
	2.1 White Box Testing and Types of White Box Testing	
	2.2 Test Case Design	
	2.3 Black Box Testing and Types of Black Box Testing	
	2.4 Gray Box Testing	
UNIT 3:	Software Testing Strategies	04
	3.1 Software Testing Process	
	3.2 Unit Testing	
	3.3 Integration-Top-down, Bottom up	
	3.4 System Testing	
	3.5 Acceptance Testing(Alpha, Beta Testing)	
	3.6 Validation and Verification	
	3.7 Performance Testing(Load and Stress Testing)	
	3.8 Regression Testing	
UNIT 4:	Testing for Specialized Environments	04
	4.1 Testing GUI's	
	4.2 Testing of Client/Server Architectures	
	4.3 Testing Documentation and Help Facilities	
	4.4 Testing for Real-Time Systems	

UNIT 5: Testing Tools & Software Quality Assurance(Introduction) 06**5.1 Software Testing Tools**

- 5.1.1 JUnit
- 5.1.2 Apache JMeter
- 5.1.3 Winrunner
- 5.1.4 Load runner
- 5.1.5 Rational Robot

5.2 Software Quality Assurance

- 5.2.1 Definition of Quality, Quality Assurance, Quality Control
- 5.2.2 SQA Planning
- 5.2.3 SQA Activities

UNIT 6: Introduction to Automation Testing 06

- 6.1 Defination of Automation Testing
- 6.2 Difference Between Mannual and Automation testing
- 6.3 Automation Tools:
 - 6.3.1 Selenium:
 - 6.3.1.1 Architecture of Selenium
 - 6.3.1.2 Defination of Webdriver and Webelements,difference between webdriver and webelement
 - 6.3.1.3 Locators and its types: Id, name ,className, tagName and Xpath
 - 6.3.2 TestNG Testing Tool: Understanding
 - Testing.xml, Adding Classes, Packages, Methods to manage Test Reports

References:

1. YogeshSingh,“SoftwareTesting”,CambridgeUniversityPress,2012
2. Software Testing Concepts and Tools, P.NageswaraRao, Dreamtech Press.
3. UnmeshGundecha,SatyaAvasarala,"SeleniumWebDriver3PracticalGuide"-

Second Edition 2018

4. Introduction to Software Testing, P.Ammann and J.Offutt, Cambridge Univ. Press.
5. Effective methods of Software Testing, Perry, John Wiley, Second Edition, 1999.
6. Total quality management,DaleH.Bestrefield,PrenticeHall,2003
7. Software Testing, N.Chauhan, Oxford University Press.
8. Varun Menon, TestNg Beginner's Guide,2013, Packt Publishing.

Website Reference Link:

1. www.opensourcetesting.org

Choice Based Credit System Syllabus (2023Pattern)

(As Per NEP 2020)

Mapping of Program Outcomes with Course Outcomes**Class:** SYBBA (C.A) (Sem- III)**Subject:** BBA (C.A)**Course:** Software Testing and Automation**Course Code:** BCA-221-VSC**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									2	
CO2		3	3						2	3				2	
CO3		3	3						2	3				2	
CO4						3			2				3	3	
CO5	3	3							2	2				3	
CO6		3	3		3									3	
CO7	3	3	3			3									

PO1: A Fundamental Knowledge and Coherent Understanding:

All of the course outcomes (COs) contribute to the development of students' disciplinary knowledge in Software testing and automation. CO1, CO5, and CO7 are Strongly mapped as the students need the knowledge of basic software testing needs, concepts, and methods. Students have a basic knowledge of manual and automation testing.

PO2: Procedural Knowledge for Skill Enhancement:

CO1, CO2, CO3, CO5, CO6, and CO7 are strongly mapped as the students need complete knowledge for a deep understanding of every concept of testing and enhancing the testing subject skills. Based on the testing fundamentals concept students can write the test cases and find the bugs in software for that purpose using the software testing life cycle.

PO3: Critical Thinking and Problem-Solving Skills:

CO1, CO2, CO3, CO6, and CO7 are strongly mapped as problem analysis is necessary for solving /developing any application using appropriate manual and automation testing construct. In manual testing, students have the skill of writing test cases and solving the bugs using different strategies and methods to find the bugs in the software. Use Automation tools to solve the problems.

PO5: Analytical Reasoning Skills:

CO1 and CO6 are strongly mapped as they focus on managing testing skills. Analyze requirements to determine appropriate testing strategies. Using fundamental concepts data can be analysed.

PO6: Innovation, Employability, and Entrepreneurial Skills:

CO4 and CO7 are strongly mapped as students apply the concepts and learn how to the Windows and web applications. Students achieve brief knowledge in testing.it is widely used, and it offers career opportunities for professionals with testing skills.

PO9: Traditional Knowledge into Modern Application:

CO2, CO3, CO4, and CO5 are moderately mapped as they focus on providing fundamental concepts related to testing, web drivers, and test cases. This includes skills such as black box testing and automation testing.

PO10: Design and Development of System:

CO2 and CO3 are strongly and CO5 is moderately mapped as students apply the concepts learned in developing GUI-based applications in continuing professional development and new developments. Students design test planning and different activities involved in test planning and also design effective test cases that can uncover critical defects in the application.

PO13: Teamwork:

CO4 is strongly mapped in the field of software development Students work constructively, cooperatively, effectively, and respectfully as part of a team.

PO14: Area Specific Expertise:

CO1, CO2, and CO3 are strongly and CO4, CO5, and CO6 are moderately mapped The students should be able to apply test cases through programming concepts, theories, and models in the various areas such as game development, many popular mobile computers after a better understanding of the subject and its contents.