PROGRAMME SPECIFIC OBJECTIVE:

The objective of the BCA programme is to prepare students for a career in software design, development and testing as well as IT support by training them in the core and emerging areas of computer applications.

Course Structure under NEP - 2020 BCA Semester-II

	Subject Code	Subject Title	Theory/ Practical	Credits	Weekly Contact Hours	Exam Duration	Marking Scheme		
							Internal	External	Total
Discipline Specific Course Core (Major)	**US02MABCA01**	Advanced C Programming	T	4	4	2:30	50	50	100
	US02MABCA02	Advanced C Programming Lab	P	4	8	3	50	50	100
Minor	**US02MIBCA03**	Web Application Development-II	T	2	2	1:30	25	25	50
	US02MIBCA04	Web Application Development-II Lab	P	2	4	2	25	25	50
Interdisciplinary	**US02IDBCA05**	Digital Electronics	T	2	2	1:30	25	25	50
	US02IDBCA06	Digital Electronics Lab	P	2	4	2	25	25	50
Ability Enhancement Course	**US02AEBCA07**	Communication Skills in English-II	P	2	4	2	25	25	50
IKS/Value-Added Course	**US02VABCA08**	Environment Studies	T	2	2	1:30	25	25	50
Skill Enhancement Course/Internship /Dissertation	**US02SEBCA09**	Information Technology Fundamentals – II (ITF-II)	T	2	2	1:30	25	25	50

BCA (Bachelor of Computer Applications)
BCA (Semester–II)

Course Code	**US02MABCA01**	Title of the Course	**Advanced C Programming**
Total Credits of the Course	**4**	Hours per Week	**4**

Course Objectives:	To understand 1. Concepts of functions, structures and unions. 2. The fundamentals of pointers and file handling.

Course Content		
Unit	Description	Weightage* (%)
1.	**User-Defined Functions** – Introduction and need of user-defined functions – Components of user-defined functions – Methods of passing parameters to functions – Recursion	25
2.	**Structures, Unions and Command-Line Arguments** – Introduction to structures – Structures and arrays – Structures within structures – Structures and functions – Unions – Command-Line Arguments	25
3.	**Usage of Pointers** – Introduction, usage and understanding of pointers – Declaration and initialization of pointer variables – Accessing variables through pointers – Chain of Pointers (Pointer to Pointer) – Pointers and arrays – Pointers as function arguments – Pointers and structures – Dynamic memory allocation	25

4.	**Usage of File Handling** – Introduction to file handling – File access modes – Input Output operations on files – Error handling during I/O operations	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	implement programs based on the concepts of functions, structures and unions.
2.	implement the programs based on pointers and work with files.

Suggested References:	
Sr. No.	References
1.	Balaguruswami : Programming in ANSI C., Tata McGraw Hill Publication, 2019.
2.	Kernighan B., Ritchie D. : The C Programming Language, Prentice Hall, 1988.
3.	Cooper H. & Mullish H : The Sprit of C, Jaico Publication House, New Delhi, 1988.

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BCA (Bachelor of Computer Applications)

BCA (Semester–II)

Course Code	**US02MABCA02**	Title of the Course	**Advanced C Programming Lab**
Total Credits of the Course	**4**	Hours per Week	**8**

Course Objectives:	1. To study the concepts of functions, structures and unions in C programming language. 2. To understand the concepts of pointers and file handling.

Course Content		
	Description	Weightage* (%)
	Part-1 Practical Based on US2MABCA01 (Unit-1 & Unit-2)	50%
	Part-2 Practical Based on US2MABCA01 (Unit-3 & Unit-4)	50%

Teaching-Learning Methodology	Project work in small groups, Hands on Training ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Implement programs based on concepts of functions, structures and unions in C programming language.
2.	Implement programs based on concepts of pointers and file handling.

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BCA (Bachelor of Computer Applications)

BCA (Semester–II)

Course Code	**US02MIBCA03**	Title of the Course	**Web Application Development – II**
Total Credits of the Course	**2**	Hours per Week	2

Course Objectives:	1. To learn the basic concepts of DHTML. 2. To study fundamentals of CSS and Scripting.

Course Content		
Unit	Description	Weightage* (%)
1.	**DHTML & Cascading Style Sheet** – Introduction to DHTML, Applications of DHTML, – Components of DHTML, – Introduction to Cascading Style Sheets (CSS), – Ways of specifying style – inline, internal, external, – Basic Syntaxes, ID and CLASS selector, SPAN, DIV – Fonts, Color, Background, Text, Border, Lists, Layers, Margin, Links, Position.	50
2.	**Introduction to Scripting** – Introduction to Scripting – Client Side Scripting vs. Server Side Scripting – How the Web works – Introduction to JavaScript – Applications and Advantages of JavaScript – Using JavaScript on a webpage	50

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%

3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand the basic concepts of DHTML, CSS and Scripting.
2.	Carry out web page development with the use of DHTML and CSS.

Suggested References:	
Sr. No.	References
1.	Ivan Bayross, "Web Enabled Commercial Applications Development using HTML, DHTML, Javascript, Perl CGI", BPB, 2004.
2.	Douglas E Comer: The Internet, PHI, Second Edition, May 2000.
3.	Wilton P., Jeremy McPeak: Beginning JavaScript, 4th Ed., Wiley Pub., 2010.
4.	Danny Goodman, Machael Morrison: "JavaScript Bible", 6th Ed., Wiley Pub., 2010.
5.	Kogent Learning Solution Inc., "HTML5 Black Book", 2016.

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BCA (Bachelor of Computer Applications)
BCA (Semester–II)

Course Code	**US02MABCA04**	Title of the Course	**Web Application Development-II - Lab**
Total Credits of the Course	**2**	Hours per Week	**4**
Course Objectives:	1. To study the basic concepts of scripting. 2. To acquire knowledge of CSS.		

Course Content		
	Description	Weightage* (%)
	Practical Based on Web Application Development – II	100%

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Implement different concepts of scripting.
2.	Implement the knowledge of the fundamentals of DHTML,CSS and DOM.

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BCA (Bachelor of Computer Applications)
BCA (Semester–II)

Course Code	**US02IDBCA05**	Title of the Course	**Digital Electronics**
Total Credits of the Course	**2**	Hours per Week	**2**

Course Objectives:	To impart knowledge on basic gates, Boolean algebra and digital logic circuits. To introduce the working of combinational and sequential logic circuits To gain understanding of logic circuits for building memory elements

Course Content		
Unit	Description	Weightage* (%)
1.	**Gates and Boolean Algebra &Basic Digital Logic Circuits** – Gates, Boolean algebra – Truth tables, Circuit equivalence – De Morgan's theorems – Encoders, Decoders, Comparators – Half Adders, Full Adders – Binary Adders	50
2.	**Memory Elements** – Latches – Flip flops – D (clocked and unclocked) and RS (clocked and unclocked) – Registers – controlled buffer, shift-left, shift-right	50

Teaching-Learning Methodology	In order to achieve the course objectives, students will be introduced to digital technologies. Various digital modules used to create digital computer devices like gates, flip flops, decoder, encoder etc

Evaluation Pattern`		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	To get the idea about digital system and numbering system.
2.	To study logic gates for digital circuit designing.
3.	Learn to design various combinational circuits

Suggested References:	
Sr. No.	References
1.	Malvino A. P.: Digital Computer Electronics, 2nd Edition, Tata McGraw, Hill Pub. Co. Ltd.,New Delhi, 1990.
2.	Gothmann, William H. : Digital Electronics - An Introduction to Theory and Practice, 2nd Edition,PHI,1982.
3.	Hall Douglas V. : Microprocessors and Interfacing - Programming and Hardware, McGraw Hill Book Company, 1986.
4	M.M. Mano : Computer System Architecture, 3rd Edition, Pearson Education, 2000.

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BCA (Bachelor of Computer Applications)
BCA (Semester–II)

Course Code	**US02IDBCA06**	Title of the Course	**Digital Electronics Lab**
Total Credits of the Course	**2**	Hours per Week	**4**

Course Objectives:	* Exploring/identifying different hardware components of a computer systems * Generating and verifying truth tables for a given Boolean expressions * Development of logic circuits for given Boolean expressions

Course Content		
	Description	Weightage* (%)
	Practical Based on Digital Electronics and Communication	100%

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Identify different hardware components of computer systems.
2.	Verify truth tables for a given Boolean expressions.
3.	Develop logic circuits for given Boolean expressions.

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BCA (Bachelor of Computer Applications)
BCA (Semester–II)

Course Code	**US2AEBCA07**	Title of the Course	**Communication Skills in English-II**
Total Credits of the Course	**2**	Hours per Week	**4**

Course Objectives:	1. To understand and use notions and functions of language for communicative purpose. 2. To prepare reports of various events. 3. To draft e-mails efficiently. 4. To prepare effective job application and resume and face interviews confidently. 5. To make healthy discussion by actively participating in debates or group discussions. 6. To prepare and make power point presentation on various occasions.

Course Content		
Unit	Description	Weightage* (%)
1.	**Oral Communication Skills & Job Skills** – Effective presentation Skills; Putting the message across, Body Language, – Proxamics and Kinesics, dealing with Nearves, Using Visual Aids – Language of Meetings and participating in a seminar Telephone Techniques – Writing Job Application and CV – Interview Skills i.e., General Preparation for an Interview, Types of Questions generally asked in interviews, Types of interviews, Importance of non-verbal aspect. – Self-development Skills: i.e., Assertiveness, Stress Management, Time Management – Interpersonal Skills: Team Development Skills i.e., Team Talk Dynamics, Communication in Teams, Leadership Skills, Giving Feedback (Johari Window etc.)	50

2.	**Writing Skills and Individual Project** – Issues in Writing Business Letters i.e., Structure and Types of Business – Letters, Letters of Inquiry, Complaint, Adjustment and Regret – Report Writing Skills i.e., Types of Reports, Characteristics of a Good Report, Preparing and Organizing a Report and Individual reports (a report about the need to computerize the activities of your department) – Students can be made to work individually on detailed projects based on the following topics. However, the list given below is not exhaustive and thus any topic related to the areas of Communication and Personality Development can be worked upon in the interest of the students: – Process of Communication – Barriers of Communication – Types of Communication – Objectives of Communication – Stress Management – Time Management – Leadership Quality – Teamwork – Body Language – Presentation Skills – Group Discussion Skills – Personal Interview Skills – Feedback Skills	50

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Test Method:		
Division of Marks (External Exam)		
1	Individual Presentation and Project	10 Marks
2	Note Taking and Note Making	10 Marks
3	Job Application and CV	10 Marks
4	Business Letters	10 Marks
5	Report Writing	10 Marks
	Total:	**50 Marks**

Note:

- The students will have to bring certified copy of his / her project manuscript to the centre of external examination for the perusal of examiners and respond to the queries and questions of examiners related to same. The topic for the project should be selected from the ones enlisted in syllabi of the First and Second Semesters.
- Individual Presentations will have to be done by the students orally on the topic of their project. The presentation should not exceed five minutes.
- On We Go (6 above) is to be used for Note-taking and Note-making exercises.

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand and use notions and functions of language for communicative purpose.
2.	Prepare reports of various events.
3.	Draft e-mails efficiently.
4.	Prepare effective job application and resume and face interviews confidently.
5.	Make healthy discussion by actively participating in debates or group discussions.
6.	Prepare and make power point presentation on various occasions.

Suggested References:	
Sr. No.	References
1.	Rajendra Pal and J S Korlahalli, essentials of Business Communication, Sultan Chand and sons www.britishcouncil.com
2.	Chrissie Wright, Communication Skills, Jaico Publication.
3.	Sunita Mishra and C. Murali Krishna, Communication Skills for Engineers Pearson Education.
4.	Meenakshi Raman and Sangita Sharma, Technical Communication; Principles and Practice, Oxford University Press.
5.	On We Go, BBC's Audio-Visual Course.

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BCA (Bachelor of Computer Applications)
BCA (Semester–II)

Course Code	**US02VABCA08**	Title of the Course	**Environment Studies**
Total Credits of the Course	**2**	Hours per Week	**2**

Course Objectives:	1. To make younger generation environment conscious. 2. To expose the students to the fundamental concepts of environment so that they can appreciate the importance of individual efforts to protect and preserve our environment. 3. To encourage them to make judicious use of our resources so that it will not only help present generation but also the future generations in meeting their needs.

Course Content		
Unit	Description	Weightage* (%)
1.	**Introduction to Environmental studies, Ecosystems and Natural Resources** – Definition, Scope and importance of Environmental Studies – Multidisciplinary nature of environmental studies – Component of Environment: Atmosphere, Hydrosphere, Lithosphere, Biosphere – Biogeochemical cycles: Carbon cycle and Nitrogen cycle – Concept of sustainability and sustainable development. – Definition and Structure of ecosystem – Abiotic and Biotic components – (Producers, Consumers and Decomposers) – Functions of Ecosystem: Energy flow in an ecosystem, Food chains, Food webs with examples – Classification -Renewable & Non-renewable Resources and types	50
2.	**Biotic Interactions** – Positive Interactions with suitable examples – A. Mutualism – B. Commensalism – C. Proto-cooperation – Negative Interactions with suitable examples – A. Exploitation – B. Competition – C. Antibiosis	50

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	understand the fundamental concepts of Environment so that they can appreciate the importance of individual efforts to protect and preserve our environment.
2.	make judicious use of our resources that will not only help present generation but also the future generations in meeting their needs.

Suggested References:	
Sr. No.	References
1.	Ecology and Environment by P.D. Sharma.
2.	Fundamentals of Ecology by E.P.Odum.
3	Ecology by Mohan P. Arora.
4.	Fundamentals of Ecology by M.C. Dash.
5.	Environmental Science by S.C.Santra.
6.	An Introduction to Environmental Engineering & Science by Gilbert N Master.
7.	Encyclopaedia of Environmental Pollution and Control by R. K. Trivedi.
8.	Ecology and Sustainable development by P.S. Ramkrishana.
9.	Environmental Conservation; Fundamentals of Forestry Vol 5 by S.S. Negi, Bishen Singh, Mahendra Pal Singh.

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BCA (Bachelor of Computer Applications)

BCA (Semester–II)

Course Code	**US02SEBCA09**	Title of the Course	**Information Technology Fundamentals - II**
Total Credits of the Course	**2**	Hours per Week	**2**

Course Objectives:	* To impart basic knowledge on Internet, web browsers, search engines and social networks * To learn different types of communication technologies * To study fundamental concepts related to computer networks

Course Content		
Unit	Description	Weightage* (%)
1.	**Internet Usage for E-learning** – Introduction to Internet and Web Browsers – Basics of search engines and their functionalities, searching information, saving web pages, downloading files, etc. – Open learning sites- Wikipedia, Wikispaces, Wikieducator etc. – Open freewares – Introduction and examples – Advanced Social Networking	50
2.	**Communication Technologies** – Different communication mechanisms – E-mail: Writing e-mails to single and multiple users, attaching a file, Marking CC and BCC, Creating exclusive communication groups – LCD Projectors: Using LCD projectors for making an audio-visual presentation – Tele/Video Conferencing – Blogging and chatting – Fax and Mobiles	50

Teaching-Learning Methodology	Multiple teaching approaches: lecture and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand the basics of Information and communication technology
2.	Explore the applications of ICT in infrastructure

Suggested References:	
Sr. No.	References
1.	Online relevant references.
2.	Behrouz Forouzan, introduction to data communications and networking, Tata McGraw-Hill Publishing co. Ltd., New Delhi, 1998, 4th edition.
3.	Tanenbaum A. S., Computer Networks, 3rd Edition Prentice-Hall of India Pvt. Ltd., New Delhi, 1997.

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