CANARA COLLEGE

Managed by Canara High School Association, Mangaluru
Reaccredited by NAAC and Affiliated to Mangalore University
Mahatma Gandhi Road, Kodialbail, Mangaluru – 575 003, D. K. District, Karnataka

BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)

[PEOs, POs, PSOs, COs & GAs]

CHOICE BASED CREDIT SYSTEM (CBCS)

(2019-20 Batch onwards)

BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)

Motto :

"Debug the bug in your logic, Grow your coding skill"

Vision :

- To empower the graduates to be technologically skilled, innovative and self-motivated.
- To build competent professionals to become part of the IT industry and research organizations.

Mission :

- To provide a strong theoretical and practical knowledge across the computer science discipline.
- To prepare students to be continuous learners in a connected world and absorb professional skills and ethical responsibilities.
- To strengthen the Industry-Academia interface.

Programme Educational Objectives (PEOs) :

PEO 1	Graduates will have a solid foundation to pursue professional careers and take up higher learning programmes such as MCA or M.Sc. in Information System or B.Ed. etc.
PEO 2	Graduates with skill of self-employment will be able to initiate and build upon start-up companies in Web designing, Graphics, Java or software for IOT devices etc.
PEO 3	They can also opt for joining top level IT industries with high confidence level.
PEO 4	They can be the good computer programmer and design projects for any organizations in systematic manner.

Programme Outcomes (POs) :

Students of B.C.A. degree Programme at the time of graduation will be able to :

PO 1	Gain adequate knowledge of IT education.
PO 2	Acquire professional skills in Linux Operating system, Android, Python etc.
PO 3	Route their own business in designing Web sites, Graphics, Java or software for IOT devices etc.
PO 4	Pursue their higher education in IT.

Graduate Attributes (GAs) :

GA 1	Academic Excellence
GA 2	Professional Efficiency
GA 3	Technical Proficiency
GA 3	Effective Communication Skills
GA 4	Leadership and Team work
GA 5	Life-Long Learning
GA 6	Creativity and Innovation
GA 7	Social Engagement

COURSE OUTCOMES (COs)

FIRST SEMESTER

Course	Details
Code	BCAC131
Title	**Fundamentals Of Information Technology**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group I : Course 1
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions Assignments, Seminars and Presentations
Evaluation Method	Viva-Voce, two Internal Assessment Exams, University Semester Exam, seminars, Group Discussion,

Learning Objectives :

- To impart the knowledge about the evolution of computers, classification, various peripherals of computers , types of softwares etc.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Identify various devices and their working principles.

CO 2 : Use various features of word document

CO 3 : Create power point presentation with variety of animation and transition

CO 4 : Manipulate spreadsheet viz. how to use the formula easily, designing the graph, filtering

CO 5 : Design database , insert records and querying in various ways.

Course	Details
Code	BCAC132
Title	**Problem Solving Using C**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group I : Course 2
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions, Seminars and Presentations, solving the code snippets.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars, Group Discussions

Learning Learning Objectives :

- To develop skills in solving problems,
- To obtain knowledge about the structure of the programming language C and
- To develop the logical thinking and program writing skill.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand the basic procedure of algorithm and flowchart which are basic concepts a programmer need to know.

CO 2 : Know about decision making and looping concepts

CO 3 : Know the meaning and advantages of using arrays

CO 4 : Apply programming knowledge to create solutions to challenging problems, including specifying, designing, implementing and validating solutions for new problems

CO 5 : Design structures and file related programs.

Course	Details
Code	BCAC133
Title	**Computer Organisation**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group I : Course :3
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, Debates, Seminars and Presentations, solving the code snippets.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars, Group Discussions

Learning Objectives :

- To introduce the number system and Boolean algebra.
- To enable the students to understand the design components of a digital subsystem that required for realizing the various components such as Register, Counter etc.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Solve the problems in various number systems.

CO 2 : Simplify the Boolean expressions by applying various postulates and theorems.

CO 3 : Design and verify the truth table of Components of Computer System like logical gates using Universal gates.

CO 4 : Design combinational circuits such as adders, comparator, multiplexer, decoder, subtractor etc.

CO 5 : Design the sequential circuit such as registers and various counters .

Course	Details
Code	BCAP 134
Title	**MS Office Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group I : Prcatical-1
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	13
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Group Discussions, Record Marks,

Learning Objectives :

- To learn various features available in MS-Powerpoint, MS-Excel, MS-Access, MS-Word

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Prepare presentations using Power Point with various transition and animations.

CO 2 : Prepare word documents with various formatting features, mail merge, tables and drawing tools.

CO 3 : Create spreadsheet with formulae, charts, filtering etc.

CO 4 : Design database using MS-Access and apply various queries to retrieve records.

Course	Details
Code	BCAP135
Title	**C Programming LAB**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group I : Prcatical-1I
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	17
Pedagogy	Lectures with interactive sessions , practical sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practical, University Semester Exam, Group Discussions, Record Marks,

Learning Objectives :

- To learn the programming logic for problems with decision making, looping, arrays, structures and files.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to write programs with:

CO 1 : Simple logic involving if, switch, for and while loops.

CO 2 : Single and two dimensional arrays.

CO 3 : User defined and recursive functions.

CO 4 : Pointer concepts.

CO 5 : Structures and files.

Course	Details
Code	BCACE 137-E2:
Title	**Elective I –Supportive Course** **Cloud Computing**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group II : Course 2
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Debates, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars,

Learning Objectives :

- To Provides knowledge about basic concepts of cloud types,
- Learn services and Deployment models.
- To provide knowledge about cloud data storage.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO1 : Analyze the Cloud computing setup with its vulnerabilities and applications.

CO 2 : Assess cloud Storage systems.

CO 3 : Realize about the necessity of Cloud security.

CO 4 : Realize the risks involved and its impact.

CO 5 : Know about cloud application .

Course	Details
Code	BCA ENL 131
Title	**Compulsory Foundation Course In English**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ First
Type	Group III - Compulsory Foundation Language- I
Total Credits	02
Total Contact Hours	48 Hrs
Contact Hours per Week	4 Hrs
Examination Duration	3 Hrs
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	5 Lessons + 5 Poems + 4 Grammar Items
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To enable the learner to communicate in real-life situations effectively and appropriately
- To use English effectively throughout the curriculum for study purposes
- To develop interest in and appreciation of Literatur**e**
- To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing

Expected Learning Outcomes :

Upon the completion of this course, the students will be able :

CO 1 : To learn reading with comprehension which help the learners to acquire new vocabulary and content.

CO 2 : To read with correct pronunciation, stress, intonation, pause and articulation of voice.

CO 3 : To analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, and theme.

CO 4 : To critically examine the value and standard of the poem.

CO 5 : To acquire and improve their skills in the four literacy methods: writing, talking, reading and listening.

CO 6 : To increase their awareness of the correct use in writing and speaking of English grammar.

Course	Details
Code	BCAKAL 131
Title	**Kannada**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First / First
Type	**Group III Compulsory Foundation Language - 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 hrs.
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	4 Units
Pedagogy	Lecture with Interactive Sessions, discussions, Debate
Evaluation Method	Viva-voce, Assignments, Two Internal Exams, One end term Semester Exam

Learning Objectives :

ವಚನ ಸಾಹಿತ್ಯ, ಮುಕ್ತಕ, ನಡುಗನ್ನಡಕಾವ್ಯ, ಹೊಸಗನ್ನಡ ಕವನ, ಕಥೆ, ಪ್ರಾಣಿಪ್ರಪಂಚ, ಸಸ್ಯಲೋಕ, ತುಳುನಾಡ ಸಂಸ್ಕೃತಿ, ಲೇಖನ ಚಿಹ್ನೆ, ಸ್ಪರ್ಧಾತ್ಮಕ ಪರೀಕ್ಷೆ ಇತ್ಯಾದಿ ವಿಚಾರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಗಳ ಮೂಲಕ ವಿದ್ಯಾರ್ಥಿಗಳ ಅರಿವನ್ನು ಹೆಚ್ಚಿಸುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನುಪೂರ್ಣಗೊಳಿಸಿದಬಳಿಕವಿದ್ಯಾರ್ಥಿಗಳು :

CO 1 :ಕನ್ನಡ ಭಾಷೆಯ ಬೆಳವಣಿಗೆಯನ್ನು ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ.

CO 2 : ಸ್ಪರ್ಧಾತ್ಮಕ ಪರೀಕ್ಷೆಗಳಲ್ಲಿನ ಕನ್ನಡ ಪತ್ರಿಕೆಯನ್ನು ಉತ್ತರಿಸಲು ಮಾಹಿತಿಯನ್ನುಪಡೆಯುತ್ತಾರೆ.

CO 3 : ವಿವಿಧ ಜ್ಞಾನಶಿಸ್ತುಗಳ ಪರಿಚಯವನ್ನುಮಾಡಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 4 : ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ಅರಿತುಕೊಳ್ಳುತ್ತಾರೆ.

CO 5: ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಮೂಲಕ ಜೀವನ ಮೌಲ್ಯಗಳ ಮಹತ್ವದ ಅರಿವನ್ನುಗಳಿಸುತ್ತಾರೆ.

Course	Details
Code	B CA HDL131
Title	**Hindi**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First /First
Type	**Group III Compulsory Foundation Language II**
Total Credits	02
Total Contact Hours	48 Hrs
Contact Hours per Week	04 Hrs
Examination Duration	3 Hrs
Max. Marks	CIA : 20 End Semester Exam : 80 Total :100
Total Modules	04
Pedagogy	Lectures with explanation in detail for the given syllabus, PPT presentation, Audio visual classes' debates, enacting drama.
Evaluation Method	Viva, Assignment, Internal Exam and End Semester Exam.

Learning Objectives:

- To give detailed explanation about prescribed stories and grammar syllabus and the authors views on stories**.**

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Get the knowledge of various forms of literature

CO 2 : Understand the need of moral values.

CO 3 : Inculcate the required Ethics.

CO 4 : Understand the grammar required for creative writing in Hindi.

CO 5 : Learn the emerging trends in Hindi literature.

Course	Details
Code	BCASKL131
Title	**Sanskrit**
Program	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/First
Type	**Group III - Compulsory Foundation Language- 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	3 Hours
Max. Marks	CIA : 20 End Semester Exam :80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Role Plays, Quiz, Group Discussions, Debates, Seminars and Presentations
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To improve the knowledge of Sanskrit Literature and Culture of Sanskrit amongst the students and make them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit, by giving them resources required.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand fundamental concepts, principles and functions of Language.

CO 2 : Understand the Literature (both Vedic & classical Literature)

CO 3 : Understand the Grammar aspects (kriyapada, vibhakthi, Prayoga et.)

CO 4 : To practice Conversation in Sanskrit

CO 5 : Understand Ancient Indian sciences like Yoga, Ayurveda, and Prose etc.

Course	Details
Code	BCACIF131
Title	**Constitution of India**
Programme	B.Com/ BBA/BCA/BSC (Applicable to all graduate Courses)
Year/Semester	First / First
Type	**Group III –Elective Foundation Course**
Total Credits	01
Total Contact Hours	28 Hrs
Contact Hour per Week	02 Hrs
Examination Duration	02 Hrs
Max. Marks	CIA : 10 End Semester Exam : 40 Total : 50
Total Modules	06
Pedagogy	Debate, Group Discussions, Viva-Voce, Project Works
Evaluation Method	Two Internal Examinations/ Viva-Voce/Assignment, One end semester examination

Learning Objectives :

To enable the students to:

- Acquire a complete and detailed understanding on Constitution of India.
- Elicit the knowledge on Constitutional issues.

Expected Outcomes :

Upon the completion of this course the students will be able to

CO 1 : Understand the structure and principles of the constitution.

CO 2 : Generate awareness on Fundamental Rights and Fundamental Duties .

CO 3 : Enrich the Knowledge on Constitutional functionaries of the state.

CO 4 : Understand the Organization and structure of Central/State government .

CO 5 : Develop insight on the Role of Judiciary in India.

SECOND SEMESTER

Course	Details
Code	BCAP 181
Title	**Basic Mathematics**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group I : Course : 4
Total Credits	02
Total Contact Hours	48 Hrs.
Contact Hours per Week	04 Hrs.
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Debates, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, Assignments, seminars,

Learning Objectives :

- To learn foundation of mathematics like Algebra , Trigonometry, Calculus, Set Theory, Logical Statements , Relations and Matrix Algebra

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand the foundations of mathematics.

CO 2 : Know the use of Trigonometry and Matrix in computer application.

CO 3 : Perform computations in mathematics.

CO 4 : Develop problem-solving skills required for Computer Applications.

Course	Details
Code	BCAP 182
Title	**Object Oriented Programming Using C++**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group I : Course : 5
Total Credits	02
Total Contact Hours	48 Hrs
Contact Hours per Week	04 Hrs
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars,

Learning Objectives :

- To learn the concept of Object Oriented Programming and Create Software applications using OOPs Concept in C++.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Realize the various operators statements used in C++.

CO 2 : Create class and objects with constructors, destructors, friend functions etc.

CO 3 : Know the concepts such as Operator overloading, inheritance, containership etc.

CO 4 : Apply the major object-oriented concepts to implement object oriented programs in C++.

CO 5 : Learn any other OOP language such as Java , C# easily.

Course	Details
Code	BCAP 183
Title	**Database Concepts And Oracle**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group I : Course : 6
Total Credits	02
Total Contact Hours	48 Hrs
Contact Hours per Week	04 Hrs
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars,

Learning Objectives :

- To provide knowledge about RDBMS Concepts ,SQL Concepts and PL/SQL Programming and database normalisation
- To learn theory involved in data models and query Languages.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Describe data models and schemas in DBMS.

CO 2 : Understand the features of database management systems and Relational database.

CO 3 : Demonstrate the relational data model and use of SQL.

CO 4 : Know the functional dependencies and use of SQL solutions to a broad range of query and data update problems.

CO 5 : Apply the concepts such as procedures, triggers ,cursors and packages in a PL/SQL program.

Course	Details
Code	BCAP 184
Title	**C++ LAB**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group I **: Prcatical-III**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	12
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Group Discussions, Record Marks,

Learning Objectives :

- To learn about various applications of OOPs concepts practically with C++ programming.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Create programs with classes and objects.

CO 2 : Use member functions and friend functions.

CO 3 : Write programs for real world problems.

CO 4 : Illustrate operator overloading concepts.

CO 5 : Write programs applying various types of inheritance.

Course	Details
Code	BCAP 185
Title	**DBMS LAB**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	**Group I : Prcatical-IV**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	12
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Group Discussions, Record Marks,

Learning Objectives :

- To learn how to apply various RDBMs concepts practically.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Create tables, insert records, modify table structure, delete table and apply queries in various ways.

CO 2 : Write queries for retrieving data from more than one related tables(Joining).

CO 3 : Write programs using procedures, functions, cursors and triggers.

CO 4 : Create program with packages.

CO 5 : Design the database for any organization effectively.

Course	Details
Code	BCACE 186-E1
Title	**Elective – II Expanded Course** **Internet of Things**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group II : Course 3
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars

Learning Objectives :

To learn

- Basic concepts of IoT and design principles for Connected devices
- IoT communication protocols , internet based connectivity
- Sensor technologies and Sensor data Communication protocols

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to know about :

CO 1 : IoT conceptual framework.

CO 2 : Components of IoT system.

CO 3 : Software and Development tools.

CO 4 : Web Communication protocols for connected devices.

CO 5 : IP addressing in IoT, Data Acquiring and storage , Organising the data Transactions on stored data.

Course	Details
Code	BCACE 187-E2:
Title	**Elective – II Expanded Course** **Big Data Analytics**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group II : Core Course 4
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars.

Learning Objectives :

- To provides an overview of approaches facilitating data analytics on huge datasets.
- To Introduce various Technologies for Handling Big Data

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to know about :

CO 1 : Exploring the use of Big Data in Business Context.

CO 2 : Technologies for Handling Big Data

CO 3 : Hadoop Ecosystem.

CO 4 : Techniques to Optimize MapReduce Jobs.

CO 5 : Big Data Analysis and data Warehouse and Changing Deployment Models in Big Data Era

Course	Details
Code	BCA ENL 181
Title	**Compulsory Foundation Course in English**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ Second
Type	Group III - Compulsory Foundation Language - I
Total Credits	2
Total Contact Hours	48
Contact Hours per Week	4
Examination Duration	3 Hrs
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	5 Lessons+ 5 Poems + 4 Grammar Items
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations,
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To enable the learner to communicate in real-life situations effectively and appropriately
- To use English effectively throughout the curriculum for study purposes
- To develop interest in and appreciation of Literatur**e**
- To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Learn reading with comprehension which help the learners to acquire new vocabulary and content

CO 2 : Read with correct pronunciation, stress, intonation, pause and articulation of voice.

CO 3 : Analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, and theme.

CO 4 : Critically examine the value and standard of the poem.

CO 5 : Acquire and improve their skills in the four literacy methods: writing, talking, reading and listening.

CO 6 : Increase their awareness of the correct use in writing and speaking of English grammar

Course	Details
Code	BCA HDL181
Title	**Hindi**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First / Second
Type	**Group III - Compulsory Foundation Language-II**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	3 Hours
Max. Marks	CIA : 20 End Semester Exam : 80 Total :100
Total Modules	04
Pedagogy	Lectures and Audio Visual classes
Evaluation Method	Viva ,Assignments , Internal Exam and Semester Exam

Learning Objectives:

- To give detailed explanation on Poems Prescribed and giving views on poets thoughts of the given poems.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Acquire the knowledge of ancient poets and their views of life.

CO 2 : Understand the views of spiritual values.

CO 3 : Understand the fantasy in the existing Literature.

CO 4 : Understand the official language in Hindi.

CO 5 : Understand the reality of the social life in the world.

Course	Details
Code	BCAKAL 181
Title	**Kannada**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First / Second
Type	**Group III - Compulsory Foundation Language - 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 hrs.
Max. Marks	CIA End Semester Exam : 80 Total : 100
Total Modules	4 Units
Pedagogy	Lecture with Interactive Sessions, discussions, Debate, Enacting Drama
Evaluation Method	Viva-voce, Assignments, Two Internal Exams, One end term Semister Exam

Learning Objectives :

ಜನಪದ ,ತತ್ವಪದ, ಸಾಂಗತ್ಯಕೃತಿ, ಅರ್ಥಶಾಸ್ತ್ರ, ಜಲಸಂಸ್ಕೃತಿ, ಕೊಡವ ಸಂಸ್ಕೃತಿ, ಕೀರ್ತನೆ, ಜಿ.ಎಸ್.ಟಿ., ಮಹನೀಯರಜೀವನಚರಿತ್ರೆ ಮುಂತಾದವಿಚಾರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಗಳ ಮೂಲಕ ವಿದ್ಯಾರ್ಥಿಗಳ ಜ್ಞಾನವನ್ನು ವಿಸ್ತರಿಸುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನುಪೂರ್ಣಗೊಸಿದಸಿದಬಳಿಕವಿದ್ಯಾರ್ಥಿಗಳು :

CO 1 :ಕನ್ನಡ ಭಾಷೆ ನೆಲ-ಜಲ ಸಂಸ್ಕೃತಿಯಅರಿವನ್ನುಪಡೆಯುತ್ತಾರೆ.

CO 2 :ನಾಟಕ ಪ್ರಕಾರದ ಮೂಲಕ ಬುದ್ಧನಜೀವನದ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನುಗಳಿಸುತ್ತಾರೆ.

CO 3 :ಭಾರತದಆರ್ಥಿಕಜಗತ್ತಿನಇತ್ತೀಚಿನ ವಿಚಾರಗಳ ಬಗ್ಗೆ ಅರ್ಥೈಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 4 :ಕವಿಗಳ, ಸಾಹಿತಿಗಳ ಬದುಕು ಹಾಗೂ ಸಾಹಿತ್ಯಗಳನ್ನು ಪರಿಚಯಿಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 5 : ಮನೋವೈಜ್ಞಾನಿಕ ವಿಚಾರಗಳ ಜ್ಞಾನವನ್ನುಪಡೆಯುತ್ತಾರೆ.

Course	Details
Code	BCASKL181
Title	Sanskrit
Program	Bachelor of Computer Applications (B.C.A.)
Year / Semester	First/ SECOND
Type	**Group III Compulsory Foundation Language - 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA : 20 End Semester Exam :80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Role Plays, Quiz, Group Discussions, Debates, Seminars and Presentations
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To improve the knowledge of Sanskrit Literature and Culture of Sanskrit amongst the students and make them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit, by giving them resources required.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand fundamental concepts, principles and functions of Language.

CO 2 : Understand the Literature (both Vedic & classical Literature)

CO 3 : Understand the Grammar aspects (Karaka, Samasa, Prayoga et.)

CO 4 : To practice Conversation in Sanskrit

CO 5 : Understand Ancient Indian sciences like Bhagavadgeetha, and Poems etc.

Course	Details		
Code	BCAHRF181		
Title	Human Rights		
Programme	B.Com/ BCA/ BBA/BSc (Applicable to all graduate courses)		
Year/Semester	First/ Second		
Type	**Group III – Elective Foundation Course**		
Total Credits	01		
Total Contact Hours	28		
Contact Hour per Week	02		
Examination Duration	02 Hrs		
Max. Marks	CIA : 10	End Semester Exam : 40	Total : 50
Total Modules	05		
Pedagogy	Lectures with Interactive Sessions, Debate, Group Discussions, PPT		
Evaluation Method	2 Internal Examinations / Assignment/ VIVA-VOCA, one end semester examination		

Learning Objectives : To enable the students to:

- Acquire awareness on Human Rights Issues and Concerns.
- Enhance citizenship sensitivity and Initiatives.

Expected Out comes :

Upon the completion of this course the students will be able to

CO 1 : Enrich their knowledge on Human Rights and Human Values.

CO 2 : Understand the concept of Human Rights.

CO 3 : Promote and protect Human Rights in India.

CO 4 : Focus on issues and concerns in Human Rights.

CO 5 : Equip themselves with international concerns on Human Rights.

THIRD SEMESTER

Course	Details
Code	BCAC231
Title	**Operating Systems & Linux**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Third
Type	Group I : Core Course 7
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions , Group Discussions, Assignments, Seminars and Presentations
Evaluation Method	Internal Assessment Exams, University Semester Exam, seminars, Group Discussion, viva-voce.

Learning Objectives : To learn

- The purpose, role, structure, functions and application of operating systems.
- Services provided by the operating systems.
- Linux file system and commands

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Analyse the structure of OS

CO 2 : Understand the basic architectural components involved in designing OS

CO 3 : Analyse the various resource management techniques

CO 4 : Conceptualize the components involved in designing a contemporary OS

CO 5 : Apply the basic commands of Linux Operating system

Course	Details
Code	BCAC232
Title	**Data Structures**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Third
Type	Group I : Core Course 8
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions, Seminars and Presentations, solving the code snippets.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars, Group Discussions

Learning Objectives : To learn about

- Choosing the appropriate data structure and algorithm design method for a specified application.
- Systematic way of solving problems and various methods of organizing large amounts of data.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1: Demonstrate various methods of organizing large amounts of data.

CO 2 : Choose the appropriate data structure to solve a programming problem.

CO 2 : Apply various sorting and searching techniques.

CO 3 : Understand the operations can be performed with stacks, queues, trees, linked lists and graphs.

CO 4 : Implement these data structures using C language.

CO 5 : Analyze the functioning of few system softwares.

Course	Details
Code	BCAC233
Title	**Visual Basic .Net Programming**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Third
Type	Group I : Course 9
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, , Seminars and Presentations, Small projects.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars.

Learning Objectives : To learn

- Programming with graphical interface using object oriented concept .
- Designing the forms.
- Database connectivity as back-end with VB interface.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Develop skill in VB.NET framework

CO 2 : Identify the use of tools and its properties

CO 3 : Write programs and connectivity with databases

CO 4 : Write console application

CO 5 : Use this software effectively in any real project work

Course	Details
Code	BCAP 234
Title	**Operating System And Data Structure Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Third
Type	Group I : Prcatical-V
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	13
Pedagogy	Lectures with interactive sessions , practical sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Record Marks,

Learning Objectives : To learn

- Various Linux OS commands and Shell scripts
- The applications of various data structures in technologies.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to do the following:

CO 1 : Create and remove folders and files, copy and rename files, searching a pattern in a file.

CO 2 : Granting and removing privileges to the users for the files, creating groups.

CO 3 : Executing simple file oriented shell scripts.

CO 4 : Sort and search the objects using various techniques.

CO 5 : Using queue, stack, and linked list with various basic operations.

CO 6 : Learning various operations on binary tree.

Course	Details
Code	BCAP235
Title	**VB .NET LAB**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Third
Type	Group I : Prcatical-VI
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	16
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Record Marks,

Learning Objectives : To learn

- Programming with graphical interface using object oriented concept .
- Designing forms.
- Database connectivity as back-end with VB interface

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Create interface including various tools available.

CO 2 : Write the event driven procedures by identifying the suitable events.

CO 3 : Create VB .Net forms with connectivity to the databases.

CO 4 : Write console application.

CO 5 : Design working interfaces for any applications.

Course	Details
Code	BCACE 237-E2:
Title	**Elective III –Skill Development** **Desktop Publishing**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Third
Type	Group II :Course 7
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Debates, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment

Learning Objectives :

- To prepare the Documents using DTP software tools like Page Maker and Corel Draw

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to produce documentation with

CO 1 : Combination of Text with different formatting features,

CO 2 : Audio, Video and Images in in standard format

CO 3 : Visiting card, Greeting cards, News paper publishing

CO 4 : Graphics designing

CO 5 : Photo painting.

Course	Details
Code	BCACE 238-E3
Title	**Elective III –Skill Development** **Excel Programming With VBA**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Third
Type	Group II :Course 8
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Debates, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment

Learning Objectives :

- To understand programming in Excel
- To familiarize Excel Macros
- To create Excel User Forms

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to

CO 1 : Create WorkBooks with customized Macros.

CO 2 : Design WorkBook with different functionality.

CO 3 : Implement User Forms with different classes of controls .

Course	Details
Code	BCA ENL 231
Title	**Compulsory Foundation Course In English**
Programme	BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)
Year / Semester	Second/ Third
Type	**Group III -Compulsory Foundation Language - I**
Total Credits	2
Total Contact Hours	48
Contact Hours per Week	4
Examination Duration	3 Hrs.
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	4 One Act Plays
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations,
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To enable the learner to communicate in real-life situations effectively and appropriately
- To use English effectively throughout the curriculum for study purposes
- To develop interest in and appreciation of Literature
- To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing

Expected Learning Outcomes :

Upon the completion of this course, the students will be able :

CO 1 : To identify the story, characters, plot.

CO 2 : To Identify the author's / characters' viewpoint, attitude or opinion.

CO 3 : To enhance · Oral and written communication skills like Accuracy and fluency of expression.

CO 4 : To master the Mechanics of writing; the use of correct punctuation marks and capital letters.

CO 5 : To Practice writing through assignments that ask them to plan, draft, revise and edit your essays over time.

CO 6 : To learn persuasive techniques used in advertising, specifically, pathos or emotion, logos or logic, and ethos or credibility/character. Learners use this knowledge to analyze advertising in a variety of sources: print, television, and Web-based advertisement

Course	Details
Code	BCA HDL 231
Title	**Hindi**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second / Third
Type	**Group III : Paper III Compulsory Foundation Language- 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	3 hours
Max. Marks	CIA : 20 End Semester Exam : 80 Total :100
Total Modules	04
Pedagogy	Lectures with interactive classes, Role plays from drama, Audio visual classes and Debates.
Evaluation Method	Assignments, Viva ,Test by MCQ, Internal Exam and End Semester Exam

Learning Objectives:

- To make students understand the drama prescribed and practice script and dialogue writing by specimen writing.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Inculcate the knowledge of creating stories.

CO 2 : Understand the need of moral values.

CO 3 : Inculcate the required Ethics.

CO 4 : Understand the specimen of dialogue writing in Hindi.

CO 5 : Learn the emerging trends in official language in Hindi literature.

Course	Details
Code	BCAKAL 231
Title	**Kannada**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second / Third
Type	**Group III Compulsory Foundation Language - 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 hrs.
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	4 Units
Pedagogy	Lecture with Interactive Sessions, discussions, Debate
Evaluation Method	Viva-voce, Assignments, Two Internal Exams, One end term Semister Exam

Learning Objectives :

ಜನಪದಲಾವಣಿ ,ವಚನ, ಹೊಸಗನ್ನಡಕವನ ತುರಂಗಭಾರತ, ಕೊಂಕಣಿ, ಅರೆಭಾಷೆ ಕವನ, ಕೃಷಿ ಸಂಸ್ಕೃತಿ, ವೈಚಾರಿಕ ಲೇಖನ, ನೀಳ್ಗತೆ, ಮುಂತಾದ ಪಠ್ಯಗಳ ಮೂಲಕ ಅರಿವಿನ ವಿಸ್ತರಣೆ ಮಾಡುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿದ ಬಳಿಕ ವಿದ್ಯಾರ್ಥಿಗಳು :

CO 1 : ಸ್ವಾತಂತ್ರ್ಯ ಹೋರಾಟಗಾರರ ಜೀವನಚರಿತ್ರೆಯನ್ನು ತಿಳಿಯುತ್ತಾರೆ.

CO 2 :ಜೀವನಮೌಲ್ಯಗಳನ್ನು ಅರಿತುಕೊಳ್ಳುತ್ತಾರೆ.

CO3 : ಕೊಂಕಣಿ ಹಾಗೂ ಅರೆಭಾಷೆಗಳ ಸೊಗಸನ್ನು ಅಧ್ಯೈಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 4 :ಕೃಷಿಸಂಸ್ಕೃತಿಯ ಪರಿಚಯವನ್ನು ಮಾಡಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 5 : ಯಾವುದೇ ವಿಷಯದ ಬಗ್ಗೆ ವೈಚಾರಿಕವಾಗಿ ಚಿಂತಿಸಲು ಪ್ರೇರಣೆಯನ್ನು ಪಡೆಯುತ್ತಾರೆ.

Course	Details
Code	BCASKL231
Title	**Sanskrit**
Program	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second / Third
Type	**Group III : Foundation Course – Language 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	3 Hours
Max. Marks	CIA : 20 End Semester Exam :80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Role Plays, Quiz, Group Discussions, Debates, Seminars and Presentations
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To improve the knowledge of Sanskrit Literature and Culture of Sanskrit amongst the students and make them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit, by giving them resources required.
- To make the students appreciate the immortal works of our Ancient seers and poets.
- To make the students Learn good Moral values and become good citizens and promote a healthy society.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand fundamental concepts, principles and functions of Language.

CO 2 : Understand the Literature (Plays – Nataka- Madhyama Vyayoga)

CO 3 : Understand the Grammar aspects (Alankara & Chandamsi)

CO 4 : Practice Conversation in Sanskrit

CO 5 : Understand Ancient Indian sciences like Yoga, Bhagavadgeetha, and Poems etc.

Course	Details
Code	BCMGEF231/ BBAGEF231/BCAGEF231/BSCGEF231
Title	Gender Equity.
Programme	B.Com/BBA/BCA/BSC (Applicable to all graduate course)
Year/Semester	Second /Third
Type	**Group III – Elective Foundation Course**
Total Credits	01
Total Contact Hours	28
Contact Hour per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA : 10 End Semester Exam : 40 Total : 50
Total Modules	04
Pedagogy	Lectures with interactive sessions, Debate, Group Discussions, Assignment, PPT.
Evaluation Method	2 Internal Assessment Examinations and Viva-Voce/ Assignment, one end semester examination.

Learning Objectives :

To enable the students to:

- Understand the Basic concepts of Gender Equity.
- Generate awareness on Gender Discrimination and Violence.
- Contribution towards women Empowerment.

Expected Learning Outcomes :

Upon the completion of this course the students will be able to

CO 1 : Enrich their knowledge on basic Concept of Gender Equity.

CO 2 : Generate awareness on Gender Discrimination and Gender violence.

CO 3 : Acquire knowledge on Constitutional Rights and protective Legislations for women.

CO 4 : Gain knowledge on Measures adopted / Implemented for Gender Empowerment.

FOURTH SEMESTER

Course	Details
Code	BCAP 281
Title	**Computer Graphics And Animation**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Fourth
Type	Group I : Course : 10
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Debates, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, Assignments, seminars,

Learning Objectives :

- To learn about various technologies in computer graphics, animation and virtual reality system.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Draw primitive graphical shapes using existing built in functions.

CO 2 : Apply various algorithms to draw lines , Circles and ellipses.

CO 3 : Implement basic transformation such as translation, scaling and rotation using matrices.

CO 4 : Perform Point clipping, line and polygon clipping.

CO 5: Know applications of Virtual reality system.

Course	Details
Code	BCAP 282
Title	**Java Programming**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Fourth
Type	Group I : course : 11
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations, viva voce
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars.

Learning Objectives :

- To understand pure object-oriented programming paradigm
- To familiarize with the fundamentals of Java features
- To introduce console and GUI based applications using Java
- To know the basic approaches to the design of software applications.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Know the structure and model of the Java programming language

CO 2 : Use the Java programming language for various programming technologies

CO 3 : Develop software Packages , applets and threads

CO 4 : Create programs using Swings.

CO 5 : Create Java interface with JDBC/ODBC connectivity.

Course	Details
Code	BCAP 283-E1
Title	**Data Mining**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Fourth
Type	Group I : Course :12
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, seminars.

Learning Objectives :

- To introduce the basic concepts and techniques of Data Mining.
- To study the methodology of engineering legacy databases for data warehousing and data mining to derive.
- To learn Business rules for decision support systems
- To develop and apply critical thinking, problem-solving, and decision-making skills.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to know:

CO 1 : Various Data Mining concepts , Association rules and Clustering techniques.

CO 2 : Web mining Concepts & Decision tress.

CO 3 : Clustering algorithms

CO 4 : How to select and implement data mining techniques suitable for the applications under consideration

Course	Details
Code	BCAP 284-E2
Title	**Computer Oriented Numerical Analysis**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Fourth
Type	Group I : Course :13
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations, Problem solving.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, seminars.

Learning Objectives :

- To provide conceptual understanding of various numerical methods, with reference to numerical solution of non linear equations and system of linear equations, interpolation, numerical differentiation and integration and numerical solution of ordinary differential equations

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to solve:

CO 1 : An algebraic or transcendental equation using an appropriate numerical method.

CO 2 : Differential equation using an appropriate numerical method.

CO 3 : Linear system of equations using an appropriate numerical method.

CO 4 : Apply Numerical Concepts in Coding.

Course	Details
Code	BCAP 285-E3
Title	**Business Mathematics & Statistics**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/Fourth
Type	Group I : Course :14
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations, Problem solving.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, seminars.

Learning Objectives :

- To learn Basic mathematical concepts like Set Theory & Vector Algebra and calculus and basic concepts on Statistics & Probability.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to apply:

CO 1 : Analytical procedures in Business Analytics.

CO 2 : SET theory and mapping.

CO 3 : Vector Algebra.

CO 4 : Statistics in business field.

CO 5 : Probability rules.

Course	Details
Code	BCAP 286
Title	**Computer Graphics And Animation Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Fourth
Type	Group I **: Practical-VII**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	12
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Practical assignment, Record Marks,

Learning Objectives :

- To apply and learn various algorithms in computer graphics.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to implement Programs:

CO 1 : With built in functions to draw primitive graphics shapes.

CO 2 : To draw lines, circles, ellipses using algorithms.

CO 3 : For clipping operations.

CO 4 : For various transformations.

CO 5 : For any given problem using graphics methods.

Course	Details
Code	BCAP 287
Title	**JAVA Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Fourth
Type	**Group I : Practical-VIII**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	12
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Group Discussions, Record Marks,

Learning Objectives :

- To learn various concepts in JAVA practically.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Create programs using simple OOP concept.

CO 2 : Use Thread applications

CO 3 : Design applets.

CO 4 : Design forms using swings.

CO 5 : Prepare projects using JAVA with database connectivity.

Course	Details
Code	BCAOE 288-E1:
Title	**Elective -Iv: Other Domain /Discipline** **Fundamentals Of ICT**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Fourth
Type	Group II : Course 9
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, practical assignment, seminars,

Learning Objectives :

- To learn the basics of computer for its effective use in day to day life.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Apply knowledge of computing analyze a problem, and identify and define the computing requirements appropriate to its solution.

CO 2 : Design, implement, and evaluate a computer based applications.

CO 3 : Know the categories of software.

CO 4 : Manage Internet tools.

Course	Details
Code	BCAOE 289-E2:
Title	**Elective -IV: Other Domain /Discipline** **E-Commerce**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Fourth
Type	Group II : Course 10
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	02 Hrs.
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	02
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exams, University Semester Exam, seminars,

Learning Objectives :

- To learn the concepts and principles of E-commerce, modern technologies used to simplify business and banking processes through e- commerce, provision of E-commerce services.

Expected Learning Outcomes :

Upon the completion of this course, the students will be aware of :

CO 1 : The principles and practice of Electronic Commerce.

CO 2 : The components, functions and roles of the Electronic Commerce environment.

CO 3 : Security Practices in E-Commerce.

CO 4 : E-Commerce payment systems .

Course	Details

Course	Details
Code	BCA ENL 281
Title	**Compulsory Foundation Course in English**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second/ Fourth
Type	**Compulsory Foundation Course**
Total Credits	2
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	1 Novel
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To enable the learner to communicate in real-life situations effectively and appropriately
- To use English effectively throughout the curriculum for study purposes
- To develop interest in and appreciation of Literature
- To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing

Expected Learning Outcomes:

Upon the completion of this course, the students will be able to :

CO 1 : Identify the story, characters, plot.

CO 2 : Identify the author's / characters' viewpoint, attitude or opinion.

CO 3 : Enhance oral and written communication skills like accuracy and fluency of expression.

CO 4 : Master the mechanics of writing; the use of correct punctuation marks and capital letters.

CO 5 : Practice writing through assignments that ask them to plan, draft, revise and edit essays over time.

CO 6 : Gain insights on persuasive techniques used in advertising and apply the same to analyze advertising in a variety of sources viz., print, television, and Web-based advertisement.

Code	BCA HDL281
Title	**Hindi**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second / Fourth
Type	**Group III Paper IV Compulsory Foundation Language**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	3 Hrs
Max. Marks	CIA : 20 End Semester Exam : 80 Total :100
Total Modules	04
Pedagogy	Lectures with interactive discussions Audio Visual Classes , Role plays
Evaluation Method	Viva, Assignments, Internal Exam and Semester Exam

Learning Objectives:

- To explain the Novel prescribed with enactment of characters in the play. Practice to write official letters in Hindi.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Acquire the knowledge of reality existing in present social life.

CO 2 : Understand the need of Official Language.

CO 3 : Understand the fantasy in modern literature.

CO 4 : Understand translations of official language in Hindi.

CO 5 : Learn various forms of official letters in Hindi.

Course	Details
Code	BCAKAL 281
Title	**Kannada**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second / Fourth
Type	**Group III - Compulsory Foundation Language - 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 hrs.
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	4
Pedagogy	Lecture with Interactive Sessions, discussions, Debate
Evaluation Method	Viva-voce, Assignments, Two Internal Exams, One end term Semister Exam

Learning Objectives :

ಜನಪದ, ಹಳೆಗನ್ನಡ, ಕೀರ್ತನೆ, ಬ್ಯಾರಿ ,ಹವ್ಯಕ ಭಾಷಾ ಕವನ, ಹೊಸಗನ್ನಡ ಕವನ ವೈಜ್ಞಾನಿಕ, ಮನೋವೈಜ್ಞಾನಿಕ.ಪಠ್ಯಗಳ ಮೂಲಕ ವಿದ್ಯಾರ್ಥಿಗಳ ಜ್ಞಾನವನ್ನು ಹೆಚ್ಚಿಸುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿದ ಬಳಿಕ ವಿದ್ಯಾರ್ಥಿಗಳು :

CO1 ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳ ಪರಿಚಯವನ್ನು ಮಾಡಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 2 :ವಿಜ್ಞಾನದ ಕುತೂಹಲಕರವಾದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ.

CO 3 : ಕರಾವಳಿ ಭಾಗದ ವಿವಿಧ ಭಾಷೆಗಳ ಸಾಹಿತ್ಯದ ಸೊಗಸನ್ನು ಅರಿಯುತ್ತಾರೆ.

CO 4 : ಮನಸ್ಸಿನ ಆರೋಗ್ಯದ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಸಮರ್ಥರಾಗುತ್ತಾರೆ.

CO 5 :ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳ ಪರಿಚಯವನ್ನು ಮಾಡಿಕೊಳ್ಳುತ್ತಾರೆ.

Course	Details
Code	BCASKL281
Title	**Sanskrit**
Program	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Second / Forth
Type	**Group III : Foundation Course – Language 2**
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	3 Hours
Max. Marks	CIA : 20 End Semester Exam :80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Role Plays, Quiz, Group Discussions, Debates, Seminars and Presentations
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End Semester Exam

Learning Objectives :

- To improve the knowledge of Sanskrit Literature and Culture of Sanskrit amongst the students and make them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit, by giving them resources required.
- To make the students appreciate the immortal works of our Ancient seers and poets.
- To make the students Learn good Moral values and become good citizens and promote a healthy society.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand fundamental concepts, principles and functions of Language.

CO 2 : Understand the Literature (Vanijya Mauktikam)

CO 3 : Understand the Grammar aspects (Nyayas & Letter)

CO 4 : Practice Conversation in Sanskrit

CO 5 : Understand Ancient Indian sciences like Kautilya neethi and Mahabharath, Pracheena Rajyashastram etc.

Course	Details
Code	BCMESF281/ BBAESF281/BCAESF281/BCESF281
Title	**Environmental Studies**
Programme	B.Com/BBA/BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)/BSC (Applicable to all graduate course)
Year/Semester	Second /Fourth
Type	**Group III – Elective Foundation Course**
Total Credits	01
Total Contact Hours	28 Hours
Contact Hour per Week	02 Hours
Examination Duration	02 Hours
Max. Marks	CIA : 10 End Semester Exam : 40 Total : 50
Total Modules	04
Pedagogy	Lectures with Interactive sessions, Debate, Group Discussions, PPT
Evaluation Method	2 Internal Examinations / VIVA-VOCE/ Assignment, one end semester examination.

Learning Objectives :

To enable the students to:

- Understand the Environmental studies.
- Gain awareness on Environmental pollution.
- Apply their knowledge in conservation and management of Natural Resources.

Expected Learning Outcomes :

Upon the completion of this course the students will be able to

CO 1 : Enrich their knowledge on Environment.

CO 2 : Generate Awareness on Environment pollutions.

CO 3 : Provide knowledge on Resource conservation.

CO 4 : Provide knowledge on legislative measures for Environment pollution.

Course	Details
Code	BCAC331
Title	**Software Engineering**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Core Course 15
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions , Group Discussions, Assignments, Seminars and Presentations
Evaluation Method	Internal Assessment Exams, University Semester Exam, seminars, Group Discussion, viva-voce.

Learning Objectives :

- To prepare students for successful careers in *software engineering.*
- To develop skills in software development systematically.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand the various software development process models..

CO 2 : Design DFD

CO 3 : Apply function oriented design.

CO 4 : Use various testing tools.

CO 5 : Analyze and resolve information technology problems through the application of systematic approaches and diagnostic tools.

FIFTH SEMESTER

Course	Details
Code	BCAC332
Title	**Computer & Communication Networks**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Course 16
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, seminars, Group Discussions

Learning Objectives :

To learn about

- Computer networks and Data Communications through Networks.
- The major concepts involved in wide-area networks (WANs),local area networks (LANs) and Wireless LANs (WLANs).

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand the architectural principles of computer networking.

CO 2 : Compare different approaches to organising networks.

CO 3 : Explain key networking protocols.

CO 4 : Hierarchical relationships among the protocols in the context of a conceptual model such as the OSI and TCP/IP framework.

CO 5 : Identify core networking and infrastructure components and their roles.

Course	Details
Code	BCAC333
Title	**Distributed Computing**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Course 17
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, , Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars.

Learning Objectives :

To learn

- To study concurrent, Client Server distributed paradigms
- To learn Interprocess Communication and Remote procedure calls.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand Concepts of Distributed Systems.

CO 2 : Design and build application programs on distributed systems.

CO 3 : Develop, test and debug RPC based client-server programs

CO 4 : Write sample RMI application.

CO 5 : Decide the type of server required for any application.

Course	Details
Code	BCAC334
Title	**WEB Technology**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Course 18
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, practical assignments , Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars.

Learning Objectives :

To learn

- The tools and technologies necessary for Web application design and development.
- Client side scripting like HTML, server side scripting like s, ASP,PHP and database interfacing.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand Web Application Terminologies and Internet Tools

CO 2 : Select and apply markup languages for processing, identifying, and presenting information in web pages..

CO 3 : Use scripting languages and web services to add interactive components to web pages

CO 4 : Design to be reusable the software components in a variety of different environments.

CO 5 : Design and implement websites with good aesthetic sense of designing.

Course	Details
Code	BCAC335
Title	**PYTHON Programming**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Course :19
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, practical assignments , Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars.

Learning Objectives :

- To learn basics of Python Programming language wih the advanced concepts like OOPS, exception handling, multi-threading, Networking, Database Connectivity and Graphical User Interface.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand features of Python.

CO 2 : Use the various data types, statements and arrays in program.

CO 3 : Apply the OOP concepts in Python programming.

CO 4 : Design networking and database connectivity.

CO 5 : Skilled at creating, debugging and testing a software application using the Python programming language

Course	Details
Code	BCAC337-E2
Title	**ANDROID Application Development**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Course :21
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, practical assignments , Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, practical assignment, seminars.

Learning Objectives :

- To provide the basic knowledge about the mobile application development in Android platform and to build applications to mobile devices.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Use the knowledge of android architecture and the tools for developing android applications

CO 2 : Work with Location services and Maps.

CO 3 : Handle Telephony and SMS.

CO 4 : Explore hardware sensors.

CO 5 : Apply the skills for creating, deploying Android applications

Course	Details
Code	BCAP 339
Title	**Web Application Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Prcatical-IX
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	Not designed
Pedagogy	Lectures with interactive sessions , practical sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Record Marks,

Learning Objectives :

To become practically strong in

- The tools and technologies necessary for Web application design and development.
- Client side scripting like HTML, server side scripting like s, ASP, PHP and database interfacing.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1 : Understand Web Application Terminologies and Internet Tools

CO 2 : Design web pages.

CO 3 : Use scripting languages and web services to add interactive components to web pages

CO 4 : Design to be reusable the software components in a variety of different environments.

CO 5 : Design and implement websites with good aesthetic sense of designing

Course	Details
Code	BCAP 340
Title	**Python Programming Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Practical-X
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	Not designed
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Record Marks,

Learning Objectives :

- To learn fundamentals of Python with the advanced concepts like OOPS, exception handling, multi-threading, Networking, Database Connectivity and Graphical User Interface.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1: Understand features of Python.

CO 2 : Use the various data types, statements and arrays in program.

CO 3 : Apply the OOP concepts in Python programming.

CO 4 : Design networking and database connectivity.

CO 5 : Skilled at creating, debugging and testing a software application using the Python programming language

Course	Details
Code	BCAP 342
Title	**AAD Lab**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/ Fifth
Type	Group I : Practical-XI
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	Not designed
Pedagogy	Lectures with interactive sessions , practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Three Internal Assessment Exam in practicals, University Semester Exam, Record Marks,

Learning Objectives :

- To provide the basic knowledge about the mobile application development in Android platform and to build applications to mobile devices.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to :

CO 1: Use the knowledge of android architecture and the tools for developing android applications

CO 2 : Work with Location services and Maps.

CO 3 : Handle Telephony and SMS.

CO 4 : Explore hardware sensors.

CO 5 : Apply the skills for creating, deploying Android applications

SIXTH SEMESTER

Course	Details
Code	BCAC381
Title	**E-Commerce**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/Sixth
Type	Group I : Course 23
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practical, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, seminars.

Learning Objectives :

To learn

- Concepts and principles E-commerce.
- Modern technologies used to simplify business and banking processes through e-commerce.
- Provision of E-commerce services, infrastructure, frameworks of web based and mobile systems for E-Commerce applications.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Understand the principles and practice of Electronic Commerce

CO 2 : Realize the components, functions and roles of the Electronic Commerce environment

CO 3 : Know about the E-Commerce payment systems.

CO 4 : Practice the E-Commerce applications with secured transactions.

Course	Details
Code	BCAC382
Title	**Network Security & Management**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/Sixth
Type	Group I : Course 24
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, seminars.

Learning Objectives :

- To provide in-depth knowledge of network Security , Database Security , information Security and Security laws.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Understand Various factors driving the need for network , Database and information security.

CO 2 : Realize the Physical points of vulnerability in a networks.

CO 3 : Know the Basic cryptography Concepts.

CO 4 : Gain the knowledge of Network Security Management.

CO 5 : Use secured Internet banking system.

Course	Details
Code	BCAC383
Title	**Software Testing**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/Sixth
Type	Group I : Course 25
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, seminars.

Learning Objectives :

- To understand the necessity of software testing and familiarize with different tools available for software testing.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Understand the importance of software testing.

CO 2 : Know different testing techniques and use of various test tools.

CO 3 : Create test strategies and plans, design test cases, prioritize and execute them.

CO 4 : Contribute to efficient delivery of software solutions

CO 5 : Implement improvements in the software development processes.

Course	Details
Code	BCAC384-E1
Title	**Programming For Analytics**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/Sixth
Type	Group I : Course 26
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs.
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and Presentations.
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam, seminars.

Learning Objectives :

- To study various programming languages in the field of Analytics like SQL, SAS, R and form foundation for further analysis of Datasets.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Obtain, clean/process and transform data.

CO 2 : Analyze and interpret data using an ethically responsible approach.

CO 3 : Use appropriate models of analysis, assess the quality of input, derive insight from results.

CO 4 : Investigate potential issues.

CO 5 : Formulate and use appropriate models of data analysis to solve hidden solutions to business related Challenges.

Course	Details
Code	BCAC387
Title	**Project Work**
Programme	Bachelor of Computer Applications (B.C.A.)
Year / Semester	Third/Sixth
Type	Group I : Course 29
Total Credits	10
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hrs
Max. Marks	CIA :100 End Semester Exam : 400 Total :500
Total Modules	NA
Pedagogy	Presentations, continuous assessment, Viva voce
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam.

Learning Objectives :

- To involve the students in all the stages of the software development life cycle (SDLC) like requirements analysis, systems design, software development/ coding, testing and documentation, with an overall emphasis on the development of reliable software systems.

Expected Learning Outcomes :

Upon the completion of this course, the students will be able to:

CO 1 : Plan for the project.

CO 2 : Prepare System design, Database design, Detailed design

CO 3 : Implement the project by coding, testing.

CO 4 : Prepare the mandatory documents.

CO 5 : Demonstrate their project effectively