

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 SCIENCE (B.Sc.) [B.Sc. (PCM / PMC / BZC)]

[PEOs, POs, PSOs, COs & GAs]

CREDIT BASED SEMESTER SYSTEM (CBSS)

BACHELOR OF SCIENCE (B.Sc.) [B.Sc. (PCM / PMC / BZC)]

Motto :

"Motivate to tackle the great scientific challenges"

Vision :

"To develop scientific temper and strive to produce globally competitive and socially responsive citizen."

Mission :

"To provide the practical skill in developing the simple applications, to enrich the students knowledge in the recent trends by imparting comprehensive knowledge with equal emphasis on theory and practices and to enhance the employability."

Programme Educational Objectives (PEOs) :

The three year B.Sc. Degree programme intends to attain the following Programme Educational Objectives :

PEO 1	To find gainful employment in scientific organizations or to find employment in school	
	systems as instructors or administrators.	
PEO 2	Pursue masters and doctoral research degrees to work in colleges, universities as professors	
	or as scientists in research establishments.	
PEO 3	To enable students to recognize the need for and the ability to engage in life-long learning.	
PEO 4	Act as administrators in public, private and government organizations or business	
	administrator with further training and education.	
PEO 5	To develop the ability to utilize the mathematical problem solving methods such as	
	analysis, modeling, and programming and mathematical software applications in	
	addressing the practical and heuristic issues.	
PEO 6	It also promotes research and creative activities of students by providing exposure to the	
	realm of physical science, life science and technical expertise.	

Programme Outcomes (POs) :

Students of B.Sc. Degree Programme at the time of graduation will be able to :

PO 1	Acquire the knowledge with facts and figures related to various subjects in Basic Science.	
PO 2	Understand the basic concepts, fundamental principles, and the scientific theories related to	
	various scientific phenomena and their relevancies in the day-to-day life.	
PO 3	Acquire the skills in handling scientific instruments, planning and performing in laboratory	
	experiments.	
PO 4	Provide knowledge about material properties and its application for developing technology	
	to ease the problems related to the society.	
PO 5	Understand the interdisciplinary nature of chemistry and to integrate knowledge of	
	mathematics, physics and other disciplines to a wide variety of chemical problems.	
PO 6	Employ critical thinking and the scientific method to design, carry out, record and analyze	
	the results of experiments.	
PO 7	Build and demonstrate leadership, teamwork and social skills and Communicate effectively	
	in different contexts.	

PO 8	Pursue masters and doctoral research degrees to work in colleges, universities as professors	
	or as scientists in research establishments.	
PO 9	Find gainful employment in scientific organizations or school systems as instructors or	
	administrators or do the business of creating web sites.	
PO 10	Developing deeper understanding of key concepts of biology at biochemical, molecular and	
	cellular level.	

Programme Specific Outcomes (PSOs) :

Upon successful completion of **B.Sc. (PCM**) Programme, the graduates will be able to :

PSO 1	Imbibe ethical, moral and social values in personal and social life leading to highly cultured	
	and civilized personality.	
PSO 2	Realize that pursuit of knowledge is a lifelong activity and in combination with untiring	
	efforts and positive attitude and other necessary qualities leads towards a successful life.	
PSO 3	Use appropriate tools and techniques for solving simple physical sciences' problems.	
PSO 4	Understand good laboratory practices and safety.	
PSO 5	Explain the underlying scientific principles that govern the chemical systems.	
PSO 6	Development of analytical problem solving skills in the major areas of chemical science.	
PSO 7	Pursue higher education and advance research in the field of science.	
PSO 8	Develop research oriented skills make aware and handle the sophisticated instruments/	
	equipments.	
PSO 9	Find various employments available in industries, scientific organizations or school systems	
	as instructors or administrators.	

Upon successful completion of **B.Sc. (PMC)** Programme, the graduates will be able to :

PSO 1	Acquire and demonstrate problem solving skills.
PSO 2	Can be good programmer in industry.
PSO 3	They can be the self-employer.
PSO 4	They can pursue higher studies in MCA.

Upon successful completion of **B.Sc. (BZC)** Programme, the graduates will be able to :

PSO 1	Understand the applications of Plant science, Animal science and Chemistry.	
PSO 2	Apply the knowledge and understanding of Science to one's own life and for their career	
	opportunities.	
PSO 3	Develop insight and improve analytical, communication and professional skills.	
PSO 4	Gains knowledge about research methodology.	
PSO 5	Focusing to prepare for higher studies and advance research in frontier areas of Science.	
PSO 6	Demonstrate progressive learning in various functional areas of Science.	
PSO 7	Contributes the knowledge for Nation building.	

Graduate Attributes (GAs) :

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

COURSE OUTCOMES (CO)

FIRST SEMESTER

Course	Details
Code	BSCENL 103
Title	General Proficiency and Communicative English
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-I : Paper-I
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	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 Literature.
- To develop and integrate the use of the four language skills i.e., reading, listening, speaking and writing.

Expected Learning Outcomes :

- **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	BSCENL 153
Title	General Proficiency and Communicative English
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-I : Paper-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 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

- 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 :

- **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	BSCENL 203
Title	General Proficiency and Communicative English
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-I : Paper-III
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 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

- 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 :

- **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 your essays over time.
- **CO 6 :** 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	BSCENL 253
Title	General Proficiency and Communicative English
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-I : Paper-IV
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	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

- 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 :

- **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 your 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.

Course	Details
Code	BSCKAL103
Title	Kannada
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-I : Paper-I
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	Lecturer with interactive sessions, discussions, debate, enacting drama
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam

ಹಳೆಗನ್ನಡ, ವಚನ, ನವ್ಯ, ಕಥನಕವನ, ಹೊಸಗನ್ನಡ, ಕಥಾಸಹಿತ್ಯ, ಕ್ರಿಯಾತ್ಮಕ, ಪ್ರಬಂಧ, ಬೇಟೆ ಸಾಹಿತ್ಯ ಇತ್ಯಾದಿ

ವಿಚಾರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಗಳ ಮೂಲಕ ವಿಧ್ಯಾರ್ಥಿಗಳ ಜ್ಞಾನವನ್ನು ವಿಸ್ತರಿಸುವುದು.

Expected Learning Outcomes :

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

CO 1: ವಚನ ಸಾಹಿತ್ಯದಲ್ಲಿ ಜೀವನ ಮೌಲ್ಯ, ಪೌರಾಣಿಕ ಕಥೆ, ಕಥನ ಕವನ ಪ್ರಕಾರಗಳನ್ನು ಕಲಿತುಕೊಂಡರು

CO 2 : ನವ್ಯ ಸಾಹಿತ್ಯ ಪ್ರಕಾರ, ಹೊಸಗನ್ನಡ ಕವಿತೆಗಳಲ್ಲಿ ಸ್ಪ್ರೀಯರ ಆದರ್ಶ ನಡವಳಿಕೆ ಬಗ್ಗೆ ಅರಿತುಕೊಂಡರು

CO 3 : ಯುವಕರಿಗೆ ಪ್ರೇರಣತ್ಮಾಕ ಸಂದೇಶಗಳು ಮತ್ತು ಮಾನವ ಸಂಬಂಧಗಳ ಮೌಲ್ಯಗಳನ್ನು ಕಲಿತುಕೊಂಡರು.

CO 4 : ಕೋಮು ಸೌಹಾರ್ದತೆ, ರಾಷ್ಟ್ರೀಯತೆ, ಬೇಟೆ ಸಾಹಿತ್ಯ, ಕನ್ನಡ ಇಂಗ್ಲಿಷ್ ಸಂಬಂಧಗಳ ವಿನ್ಯಾಸದ ಬಗ್ಗೆ ಅರಿತುಕೊಂಡರು.

CO 5 : ಕ್ರಿಯಾತ್ಮಕ ಕನ್ನಡದಲ್ಲಿ ಪ್ರಭಂದ ರಚನೆ ಮತ್ತು ವಿಜ್ಯಾನ ಸಾಹಿತ್ಯದ ಬಗ್ಗೆ ತಿಳಿದುಕೊಂಡರು.

Course	Details
Code	BSCKAL153
Title	Kannada
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-I : Paper-II
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	4 units
Pedagogy	Lecture with interactive sessions, discussions, debate, enacting drama
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End

ಹಳೆಗನ್ನಡ, ಕೀರ್ತನ ಸಾಹಿತ್ಯ, ಹೊಸಗನ್ನಡ, ಪ್ರವಾಸ ಸಾಹಿತ್ಯ, ಸಸ್ಯ ಸಾಹಿತ್ಯ, ದಲಿತ ಸಾಹಿತ್ಯ, ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ ಇತ್ಯಾದಿ ವಿಚಾರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಗಳ ಮೂಲಕ ವಿಧ್ಯಾರ್ಥಿಗಳ ಜ್ಞಾನವನ್ನು ವಿಸ್ತರಿಸುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿದ ಬಳಿಕ ವಿದ್ಯಾರ್ಥಿಗಳು :

CO1: ಪೌರಾಣಿಕ ಕಥೆ, ಭಕ್ತಿವಿಚಾರ ರಾಷ್ಟ್ರಾಭಿಮಾನವನ್ನು ಕಲಿತರು.

CO 2 : ಬಂಡಾಯ ಸಾಹಿತ್ಯದ ಮೂಲಕ ಸಮಾಜದ ಸ್ಥಿತಿಗತಿಗಳನ್ನು ಅರಿತರು.

CO 3 : ಜಾನಪದ ವೈದ್ಯ, ಕಥೆ ಮತ್ತು ಸಾಹಿತ್ಯದಲ್ಲಿ ಸಾಮಾಜಿಕ ಹೊಣೆಗಾರಿಕೆಯನ್ನು ಅರಿತರು.

CO 4 : ಭೂಮಸುದೆಯ ಸಮಸ್ಯೆಗಳು, ಅಸ್ಪೃಶ್ಯತೆಯ ಹೊಸ ನೋಟ, ವಿಜ್ಞಾನದ ಸಮಸ್ಯೆಗಳನ್ನು ತಿಳಿದುಕೊಂಡರು.

CO 5 : ನಾಟಕ ಸಾಹಿತ್ಯದ ಮೂಲಕ ಪೌರಾಣಿಕ ಕಥೆಯಲ್ಲಿ ತ್ಯಾಗ ಮನೋಭಾವಗಳನ್ನು ಅರಿತುಕೊಂಡರು.

Course	Details
Code	BSCKAL 203
Title	Kannada
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-I : Paper-III
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	Lecture with interactive sessions, discussions, debate, enacting drama
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam

ಹಳೆಗನ್ನಡ, ಕೀರ್ತನ ಸಾಹಿತ್ಯ, ಹೊಸಗನ್ನಡ, ಪ್ರವಾಸ ಸಾಹಿತ್ಯ, ಸಸ್ಯ ಸಾಹಿತ್ಯ, ದಲಿತ ಸಾಹಿತ್ಯ, ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ ಇತ್ಯಾದಿ ವಿಚಾರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಗಳ ಮೂಲಕ ವಿಧ್ಯಾರ್ಥಿಗಳ ಜ್ಞಾನವನ್ನು ವಿಸ್ತರಿಸುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿದ ಬಳಿಕ ವಿದ್ಯಾರ್ಥಿಗಳು :

CO1: ಹಳೆಗನ್ನಡ, ಯಕ್ಷಗಾನ ಪ್ರಸಂಗಗಳಲ್ಲಿ ಪುರಾಣಿಕ ಕಥೆಗಳ ಮೂಲಕ ಸಂಸ್ಕೃತಿ ವಿಚಾರಗಳನ್ನು ಕಲಿತುಕೊಂಡರು.

CO 2 : ಜಾನಪದ ಗೀತೆ, ವಚನಗಳಲ್ಲಿ ಭಕ್ತಿ ವಿಚಾರ, ಸಮಾಜ ವಿಮರ್ಶೆ, ಗ್ರಾಮೀಣ ಬದುಕಿನ ಸಮಸ್ಯೆಗಳನ್ನು ಅರಿತರು.

CO3: ಗ್ರಾಮೀಣ ಜನಜೀವನ, ಸಂಪ್ರದಾಯ, ಪರಿಸರಜೀವವೈವಿಧ್ಯತೆ, ವೈಚಾರಿಕ ಪ್ರಜ್ಞೆಯನ್ನು ಕಲಿತರು.

CO 4 : ಜಾತಿ ಪದ್ಧತಿಯ ಶೋಷಣೆ, ಪತ್ರಿಕಾ ವರದಿ ರಚನೆಗಳನ್ನು ಕಲಿತರು.

CO 5 : ಕಾದಂಬರಿ ಪ್ರಕಾರದಲ್ಲಿ ಗ್ರಾಮೀಣ ಜನ ಜೀವನ ಕ್ರಮಗಳನ್ನು ಕಲಿತುಕೊಂಡರು.

Course	Details
Code	BSCKAL 253
Title	Kannada
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-I : Paper-IV
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	4
Pedagogy	Lecturer with interactive sessions, discussions, debate, enacting drama
Evaluation Method	Viva-Voce, Assignments, Two internal exams, one end term semester
	exam

ಹಳೆಗನ್ನಡ, ಕೀರ್ತನ ಸಾಹಿತ್ಯ, ತತ್ವಪದ, ಖಂಡಕಾವ್ಯ, ಮಹಾಕಾವ್ಯ, ಪ್ರಬಂಧ, ವಿದ್ಯುನ್ಮಾನ, ಮಹಿಳಾ, ದಲಿತ ಸಾಹಿತ್ಯ, ವಿಜ್ಞಾನ ಬರವಣಿಗೆ ಇತ್ಯಾದಿ ವಿಚಾರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಗಳ ಮೂಲಕ ವಿಧ್ಯಾರ್ಥಿಗಳ ಜ್ಞಾನವನ್ನು ವಿಸ್ತರಿಸುವುದು.

Expected Learning Outcomes :

ಪಠ್ಯವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿದ ಬಳಿಕ ವಿದ್ಯಾರ್ಥಿಗಳು :

CO 1: ಪುರಾಣಿಕ ಕಥೆ, ವಚನ, ಹೊಸಗನ್ನಡ ಕವಿತೆಗಳಲ್ಲಿ ಜೀವಪ್ರೀತಿ, ಪುರಾಣಿಕ ಕಥಾಜ್ಞಾನ, ಪ್ರಬಂದ ಸಾಹಿತ್ಯದಲ್ಲಿ ಮಾತಿನ ಮಹತ್ವವನ್ನು ಅರಿತರು.

CO 2 : ಯೇಸುವಿನ ತ್ಯಾಗ ಬಲಿದಾನ, ತತ್ವಪದಗಳ ಮೂಲಕ ಬದುಕಿನ ಸಾರ್ಥಕ್ಯದ ರೀತಿನೀತಿಗಳನ್ನು ತಿಳಿದುಕೊಂಡರು.

CO 3 : ದಲಿತ ಸಾಹಿತ್ಯದ ಮೂಲಕ ಸಾಮಾಜಿಕ ಅಸಮಾನತೆಯನ್ನು ಅರಿತರು.

CO 4 : ಮಹಾಕಾವ್ಯದ ಮೂಲಕ ಊರ್ಮಿಳಾ ಪಾತ್ರದ ಮನೋವಿಶ್ಲೇಷಣೆಯನ್ನು ಕಲಿತುಕೊಂಡರು.

CO 5 : ಪವಿತ್ರ ಪ್ರೇಮ, ಹೆಣ್ಣಿನ ಶೋಷಣೆ , ಸಮೂಹ ಮಾಧ್ಯಮಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಂಡರು.

Course	Details
Code	BSCHDL104
Title	Hindi
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-I : Paper-I
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, PPT Presentation, Audio-Visual
	classes, debates, enacting drama.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam and One End
	Semester Exam

To give detailed explanation about prescribed stories and grammar syllabus and the authors views on stories. To make students inculcate the reality of society.

Expected Learning Outcomes :

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

CO 1 : Get knowledge of Literature of forms

CO 2 : Understand the need of moral values.

CO 3 : Follow the required Ethics.

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

CO 5 : Gain insights on the emerging trends in literature.

Course	Details
Code	BSCHDL 154
Title	Hindi
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-I : Paper-II
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 and Audio Visual classes Enacting the characters of the dramas.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam and One End
	Semester Exam

- To give detail explanation on stories prescribed and visualizing the characters of the stories and giving views on poets thoughts of the given poems.
- Enable the students inculcate moral values in their life.

Expected Learning Outcomes :

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

CO 1 : Get 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	BSCHDL 204
Title	Hindi
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-I : Paper-III
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total :100
Total Modules	04
Pedagogy	Lectures with interactive classes, Role plays from drama, Audio visual
	classes and Debates
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam and One End
	Semester Exam

- To make students understand the moral values given in stories prescribed and practicing script and dialogue writing by specimen writing.
- Enable the students inculcate the moral values in the prescribed Novel.

Expected Learning Outcomes :

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

CO 1 : Get knowledge of creating stories.

CO 2 : Understand the need of moral values.

CO 3 : Follow the required Ethics.

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

CO 5 : Gain insights on the emerging trends in literature.

Course	Details
Code	BSCHDL 253
Title	Hindi
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-I : Paper-IV
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 discussions Audio Visual Classes, Role plays
Evaluation Method	Viva, Assignments, Internal Exam and Semester Exam
Learning Objectives :	·

- To explain the Drama prescribed with enactment of characters in the play.
- Practice to write Translation, as well as learn the official language Hindi.

Expected Learning Outcomes :

- **CO 1 :** Acquire knowledge of reality in present social life.
- **CO 2 :** Understand the need of spiritual values.
- **CO 3 :** Understand the Fantasy in modern literature.
- **CO 4 :** Understand Translations of official language in Hindi.
- **CO 5 :** Get acquainted with emerging trends in Hindi Translations.

Course	Details
Code	BSCSKL 103
Title	Sanskrit
Program	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-I : Paper-I
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, 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

- To improve the knowledge of Sanskrit literature and culture amongst the students and enable them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit.

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 and Classical literature.

CO 3: Understand the Grammar aspects viz., Kriyapada, Vibhakthi, Prayoga etc.

CO 4 : Communicate in Sanskrit language.

CO 5 : Understand ancient Indian sciences like Yoga and Prose etc.

Course	Details
Code	BSCSKL153
Title	Sanskrit
Program	Bachelor of Science
Year / Semester	First / Second
Туре	Group-I : Paper-II
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, 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

- 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.

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 and Classical literature.

CO 3: Understand the Grammar aspects viz., Karaka, Samasa, Prayoga etc.

CO 4 : Communicate in Sanskrit language.

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

Course	Details
Code	BSCSKL 203
Title	Sanskrit
Program	Bachelor of Science
Year / Semester	Second / Third
Туре	Group-I : Paper-III
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 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

- To improve the knowledge of Sanskrit Literature and Culture of Sanskrit amongst the students and enable them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit.

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 i.e., Plays – Nataka.

CO3: Understand the Grammar aspects viz., Alankara and Chandamsi.

CO 4 : Communicate in Sanskrit language.

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

Course	Details
Code	BSCSKL253
Title	Sanskrit
Program	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-I : Paper-IV
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 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

- To improve the knowledge of Sanskrit literature and culture of Sanskrit amongst the students and enable them succeed in life.
- To motivate students to spread the essence of Devabhasha Sanskrit.

Expected Learning Outcomes :

- CO 1 : Understand fundamental concepts, principles and functions of Sanskrit language.
- CO 2 : Understand the Literature i.e., Vijnanashtastra.
- CO3: Understand the Grammar aspects viz., correct the sentences and letter.
- **CO 4 :** Communicate in Sanskrit language.
- **CO 5 :** Understand ancient Indian sciences like Yoga, Bhagavadgeetha, and Mahabharatha, Patanjali Yoga, etc.

Course	Details
Code	BSCPHC 103
Title	General Physics-I
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Use of
	charts
Evaluation Method	Assignment, Course related Activities, Two Internal Assessment Exam,
	One End Semester Exam

To introduce the concepts of mechanics, Thermodynamics, Low temperature Physics its principles and applications.

Expected Learning Outcomes:

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

CO 1 : Understand the concepts of basic laws of motion in various mechanisms.

CO 2 : Determine the moment of inertia of different objects about a given axis.

CO 3 : Apply various laws of thermodynamics to various process and real systems.

CO 4: Apply the concept of entropy, calculate heat, work and efficiency of Carnot's engine.

CO 5 : Understand the gas laws.

CO 6 : Differentiate between real and ideal gas.

Course	Details
Code	BSCPHC 104
Title	Physics Practicals-I
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-II
Total Credits	01
Total Contact Hours	24+24
Contact Hours per Week	03+03
Examination Duration	03 Hours
Max. Marks	CIA : 10 End Semester Exam : 40 Total : 50
Total Modules	08 Practicals
Pedagogy	Electrical connections, setting the instruments, taking readings.
Evaluation Method	Viva-Voce, one Internal Assessment Exam, One End Semester Exam

To understand the basic concepts, properties and applications of surface tension, different modules of solid materials.

Expected Learning Outcomes :

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

CO 1 : Understand the moment of inertia of solid material.

CO 2 : Determine the moment of inertia of the fly wheel.

CO 3 : Find the different moduli of solid materials.

CO 4 : Determine the Fermi energy of a copper metal.

CO 5 : To determine the surface tension of water.

CO 6 : Determine of acceleration due to gravity.

Course	Details	
Code	BSCPHC 152	
Title	General Physics-II	
Programme	Bachelor of Science (B.Sc.)	
Year / Semester	First / Second	
Туре	Group-II	
Total Credits	02	
Total Contact Hours	48	
Contact Hours per Week	04	
Examination Duration	03 Hours	
Max. Marks	CIA : 20End Semester Exam : 80Total : 100	
Total Modules	04	
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Use of	
	charts	
Evaluation Method	Assignment, Course related Activities, Two Internal Assessment Exam,	
	One End Semester Exam	

To introduce the concepts, principles and applications of Properties of matter, relativity, Astrophysics and waves and oscillations.

Expected Learning Outcomes :

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

CO 1 : Revise the fundamental concepts, principles and laws of relativity.

CO 2 : Understand the Transformation equations.

CO 3 : Know the concepts of modulus of elasticity, viscosity and its applications.

CO 4: Explore the big bang theory and the different stages of stars.

CO 5 : Distinguish between free, forced and damped oscillations with example .

CO 6 : Enhance the application of Fourier's theorem.

Course	Details
Code	BSCPHC 153
Title	Physics Practicals-II
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
Total Credits	01
Total Contact Hours	24+24
Contact Hours per Week	03+03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	08 Practicals
Pedagogy	Electrical connections, setting the instruments, taking readings.
Evaluation Method	Viva-Voce, One Internal Assessment Exam, One End Semester Exam

To understand the basic concepts, properties and applications of basic laws, modules of solid materials and semiconductor materials.

Expected Learning Outcomes :

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

CO 1 : Determine the moment of inertia of solid material.

CO 2 : Determine the Young's modulus of given cantilever.

CO 3 : Find the of different modules of solid materials

CO 4 : Get the of coefficient of viscosity of given liquid.

CO 5 : Understand the difference between interfacial tension of water and kerosene.

CO 6 : Find the acceleration due to gravity.

Course	Details
Code	BSCPHC 203
Title	Optics
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA: 20End Semester Exam: 80Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations,
	Demonstration of theory in the Laboratory.
Evaluation Method	Assignment, Activities, Two Internal Assessment Exam, One End
	Semester Exam

To introduce the concepts, principles and applications of interference, Polarization and diffraction, electromagnetism, Radiation and Lasers.

Expected Outcomes :

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

CO 1 : Obtain the fundamental knowledge within interferometry, coherence, polarization and diffraction.

CO 2 : Get acquainted with Fresnel's and Fraunhofer's diffraction.

CO 3 : Understand the concepts of modulus of elasticity, viscosity and its applications.

CO 4 : Describe the different types of lasers, its principle, properties of laser beam.

CO 5 : Understand Maxwell field equations.

CO 6 : Revise the concept of transverse nature of electromagnetic wave.

Course		Details	
Code	BSCPHC 204		
Title	Physics Pract	ticals-III	
Programme	Bachelor of Se	cience (B.Sc.)	
Year / Semester	Second / Thire	d	
Туре	Group-II		
Total Credits	01		
Total Contact Hours	24+24		
Contact Hours per Week	03+03		
Examination Duration	03 Hours		
Max. Marks	CIA:10	End Semester Exam : 40	Total: 50
Total Modules	08 Practicals		
Pedagogy	Electrical con	nections, setting the instruments, taking reading	<u></u> gs.
Evaluation Method	Viva-Voce, O	ne Internal Assessment Exam, One End Semest	ter Exam
Learning Objective:			
To understand the basic concepts, properties and optical applications of different materials			

Expected Learning Outcomes:

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

CO 1 : Determine the low resistance of the given coil.

CO 2 : Study of charging of CR circuit.

CO 3 : Determine the wavelength of given LASER.

CO 4 : Verify the radiation laws.

CO 5 : Understand the phenomenon of diffraction.

CO 6 : Understand the phenomenon of interference.

Course	Details
Code	BSCPHC 253
Title	Electricity and X-ray Crystallography
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Use of
	models.
Evaluation Method	Assignment, Activities, Two Internal Assessment Exam, One End
	Semester Exam

To introduce the concepts and applications of Transients and DC networks, alternating currents and filters, electrical and magnetic measurements, X-Ray crystallography and Super conductivity.

Expected Learning Outcomes :

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

CO 1 : Obtain the behavior of ohmic and non-ohmic devices in DC circuits.

CO 2 : Understand the network theorem and its applications.

CO 3 : Convert Thevinin's circuit to Norton's circuit and vice-versa.

CO 4 : Study the response of LR, CR, LCR circuits.

CO 5: Explain the Applications of filter circuits.

CO 6 : Understand the Applications of Ballistic Galvanometer.

CO 7 : Knowledge of production and characteristics of X-Rays.

CO 8 : Understand the Application of Bragg's spectrometer.

CO 9 : Apply the applications of superconductors.

Course	Details
Code	BSCPHC 254
Title	Physics Practicals-IV
Programme	Bachelor of Science (B. Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	01
Total Contact Hours	24 +24
Contact Hours per Week	03+03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	02
Pedagogy	Electrical connections, setting the instruments, taking readings.
Evaluation Method	Viva-Voce, One Internal Assessment Exam, One End Semester Exam

To understand the basic concepts, properties, electrical and optical applications of different materials

Expected Learning Outcomes :

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

CO 1 : Verify the law of combination of capacitors.

CO 2 : Determine the charge sensitiveness of BG.

CO 3 : Determine the horizontal component of earth's magnetic field.

CO 4 : Verify the field along the axis of a coil.

CO 5 : Understand the optical phenomenon.

CO 6 : Verify the Maximum Power Transfer theorem.

Course	Details	
Code	BSCPHC 307	
Title	Modern Physics	
Programme	Bachelor of Science (B.Sc.)	
Year / Semester	Third / Fifth	
Туре	Group-II	
Total Credits	02	
Total Contact Hours	48	
Contact Hours per Week	03	
Examination Duration	03 Hours	
Max. Marks	CIA : 20 End Semester Exam : 80	Total : 100
Total Modules	03	
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations.	
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Seme	ster Exam

To introduce the concepts and applications quantum mechanics, atomic spectra, molecular spectra and scattering.

Expected Outcomes :

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

CO 1 : Understand the wave nature of particle, De-Broglie wavelength.

CO 2 : Find the difference between optical and electron microscope.

CO 3 : Differentiate classical and quantum mechanics.

CO 4 : Understand different atomic models.

CO 5: Identify the different regions of molecular rotational, vibration and electronic spectra .

CO 6 : Understand the Applications of molecular and electronic spectra.

Course	Details
Code	BSCPHC 308
Title	Condensed Matter Physics
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Use of
	charts and models.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam

To introduce the concepts and applications of Statistical physics, specific heat and free electron theory, Hall effect and band theory of solids, BJT.

Expected Learning Outcomes :

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

CO1: Differentiate the classical and quantum statistics .

CO 2 : Get the concepts and limitations of Einstein and Debye's theory of specific heat of solids.

CO 3 : Differentiate classical and quantum free electron theory.

CO 4 : Understand the formations of energy bands in solids.

CO 5 : Identify the different regions of Transistor characteristics.

CO 6 : Apply the applications of Transistors in electronic circuits.

Course	Details	
Code	BSCPHC 309	
Title	Physics Practicals-V	
Programme	Bachelor of Science (B.Sc.)	
Year / Semester	Third / Fifth	
Туре	Group-II	
Total Credits	02	
Total Contact Hours	32+32	
Contact Hours per Week	04+04	
Examination Duration	03 Hours	
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100	
Total Modules	08 Practicals	
Pedagogy	Electrical connections, setting the instruments, taking readings.	
Evaluation Method	Viva-Voce, one Internal Assessment Exam, One End Semester Exam	
Learning Objective:		
To understand the characteristics of Transistor, Logic gates and Specific charge of an electron.		
Expected Learning Outcomes :		

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

CO 1 : Study the Series resonance circuit.

CO 2 : Determine the unknown capacitance by Anderson's Bridge.

CO 3 : Find the wavelength of light by Biprism.

CO 4 : Determine the Planck's constant by using LEDs.

CO 5 : Understand the Transistor characteristics.

CO 6 : Verify the truth tables of Logic Gates.

Course	Details
Code	BSCPHC 357
Title	Nuclear Physics
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
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, Use of PPT Presentations, Use of
	charts and models.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam

To introduce the concepts and applications nuclear radiation, artificial transmutation, nuclear structure and models, nuclear energy, particle accelerators, detectors, cosmic rays and fundamental particles.

Expected Learning Outcomes :

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

CO1: Understand the nuclear decay ,radio carbon dating .

CO 2 : Classify the neutron and its properties.

CO 3 : Derive the Rutherford alpha scattering formula.

CO 4 : Estimate the mass of mesons using uncertainty principle.

CO 5: Explain the advantages of particle accelerators and detectors .

CO 6 : Acquire the concepts of fundamental particles.

Course	Details
Code	BSCPHC 358
Title	Electronics
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Final /Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Use of
	charts and models.
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts and applications of OP-AMP, Regulated Power supply, oscillators, digital electronics and communication electronics.

Expected Learning Outcomes :

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

CO 1 : Apply the applications of opamps in different electronic circuits.

CO 2 : Understand the digital circuits and its applications.

CO 3 : Differentiate between analog and digital circuits.

CO 4 : Obtain the principles of communications and its applications.

CO 5 :. Find the advantages of different communications in electronic field.

CO 6 : Differentiate the construction of LCD and LED.

Course	Details	
Code	BSCPHC 359	
Title	Physics Practicals-VI	
Programme	Bachelor of Science (B.Sc.)	
Year / Semester	Third / Sixth	
Туре	Group-II	
Total Credits	02	
Total Contact Hours	32+32	
Contact Hours per Week	04+04	
Examination Duration	03 Hours	
Max. Marks	CIA : 20End Semester Exam : 80Total : 100	
Total Modules	08 Practicals	
Pedagogy	Electrical connections, setting the instruments, taking readings.	
Evaluation Method	Viva-Voce, one Internal Assessment Exam, One End Semester Exam	
Learning Objective:		
To understand the concepts of OP-AMP, Logic gates and Capacitance.		
Expected Learning Outcomes :		

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

CO 1 : Study the Parallel resonance circuit.

CO 2 : Determine the unknown capacitance by using BG.

CO 3 : Determine the Frequencies by Wien Bridge Oscillator.

CO 4 : Study OP-AMP.

CO 5 : Explain the working of the CE amplifier circuit.

CO 6 : Verify the truth tables of Logic Gates.

Course	Details
Code	BSCCHC 103
Title	Chemistry Paper-I
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-II
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, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Charts,
	Model Making Activity.
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of periodic properties, method of analysis, chemical bonding, nature of bonding and mechanisms of organic reaction.

Expected Learning Outcomes :

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

CO1: Identify the variation of physical and chemical properties of elements in periodic table.

CO 2 : Minimize the error in practical analysis.

CO3: Understand the mechanism of organic reactions.

CO 4 : Study the different crystal structures.

CO 5 : Understand the various types of bonding in inorganic and organic molecules.

Course	Details
Code	BSCCHC 104
Title	Chemistry Practical-I
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
Total Credits	01
Total Contact Hours	48
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	12
Pedagogy	Lectures with interactive sessions, Use of equipments, Demonstration of
	the experiments, Brainstorming, Use of Charts.
Evaluation Method	One Internal Assessment Exam, One End Semester Exam
Learning Objectives :	•

To introduce the concepts of systematic qualitative analysis of organic compounds, chromatography.

Expected Learning Outcomes :

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

CO 1 : Predict the given organic compound

CO 2 : Determine the melting point/boiling point of the organic compounds

CO 3 : Identify the elements and functional group present in the organic compounds

CO 4 : Understand the chromatographic techniques.

CO 5 : Find out the R_f value and identification of organic compounds.
Course	Details
Code	BSCCHC 153
Title	Chemistry Paper-II
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
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, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of
	Charts
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of states of matter, s and p block elements, industrial preparation of some materials, synthetic utility of reagents, electrophilic addition reaction.

Expected Learning Outcomes :

- **CO 1 :** Make out the applications of liquid crystals, liquefaction of gases, and advantages of ammonia as solvent.
- **CO 2 :** Understand the variation of periodic properties in s and p block elements.
- CO3: Explain the Preparation of glass, paper and cement.
- **CO 4 :** Interpret the synthetic utility of oxidizing and reducing agents in chemical reaction.
- CO 5: Write the mechanism of Electrophilic addition to carbon-carbon multiple bonds.

Course	Details	
Code	BSCCHC 154	
Title	Chemistry Practicals- II	
Programme	Bachelor of Science (B.Sc.)	
Year / Semester	First / First	
Туре	Group-II	
Total Credits	01	
Total Contact Hours	48	
Contact Hours per Week	03	
Examination Duration	03 Hours	
Max. Marks	CIA : 10End Semester Exam : 40Total : 50	
Total Modules	12	
Pedagogy	Lectures with interactive sessions, Use of equipments, Demonstration of	
	the experiments, Brainstorming, Use of Charts.	
Evaluation Method	One Internal Assessment Exam, One End Semester Exam	
Learning Objectives :		
To introduce the concepts of volumetric analysis		
Expected Learning Outcomes :		
Upon the completion of this course, the students will be able to :		
CO 1 : Study the volumetric analysis of HCl, NaOH, $CuSO_4$ etc.		

CO 2 : Prepare standard solution.

CO 3 : Estimate the amount of substance present in the given solution.

CO 4 : Find the concentration of unknown solution.

CO 5 : Describe how color intensity can be used as an indicator of concentration.

Course	Details
Code	BSCCHC 203
Title	Chemistry Paper-III
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Chart
	Presentation, Article Writing,
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of d and f block elements, thermodynamics, binary mixture, concepts of acids and bases, oxidation and reduction reaction, structure and reactive of phenols, ethers and carbonyl compounds.

Expected Learning Outcomes :

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

CO1: Identify the variation of periodic properties in d and f block elements.

CO 2 : Understand laws , spontaneity and its relationship with Gibb's free energy.

CO 3 : Distinguish the stability of phenolic compound with other functional groups.

CO 4 : Write the mechanisms of named reaction.

CO 5 : Recognize the fundamentals of food processing, analysis and packing technology.

CO 6 : Lists out the concepts of acids and bases using various theories.

Course	Details
Code	BSCCHC 204
Title	Chemistry Practical-III
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-II
Total Credits	01
Total Contact Hours	48
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	12
Pedagogy	Lectures with interactive sessions, Use of equipments, Demonstration of
	the experiments, Brainstorming, Use of Charts.
Evaluation Method	One Internal Assessment Exam, One End Semester Exam

To introduce the concepts of systematic semi micro qualitative analysis of mixtures of two inorganic salts.

Expected Learning Outcomes :

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

CO 1 : Develop the skills to separate radicals .

CO 2 : Impart the skills and knowledge in estimation of compounds through preliminary test- nature, colour, solubility, dry test, wet test for acid and basic radicals.

CO 3 : Find the anions and cations.

CO 4 : Separate the cations in different group by solubility tests and analysis.

CO 5 : Find the ions using flame test.

Course	Details
Code	BSCCHC 252
Title	Chemistry Paper-IV
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-I
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, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Chart
	Presentation
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of M-L bonding in transition metal compounds, chemical and phase equilibrium, various properties of solution and solvent, Various traction mechanism

Expected Learning Outcomes :

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

CO1: Interpret the nomenclature and bonding in coordination compounds.

CO 2 : Understand the concepts of M-L bonding in transition metal compounds.

CO 3 : Find out the various type of equilibrium using phase diagram.

CO 4 : Realize working and application of Refractometry.

CO 5 : Recognize the variation of properties in solvents and solution.

Course	Details
Code	BSCCHC 253
Title	Chemistry Practical-IV
Programme	BSc
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	01
Total Contact Hours	48
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	12
Pedagogy	Lectures with interactive sessions, Use of equipments, Demonstration of
	the experiments, Brainstorming, Use of Charts.
Evaluation Method	One Internal Assessment Exam, One End Semester Exam

To introduce the concepts of determination of density, viscosity, surface tension, percentage of NaCl present in water-phenol system, molecular weight of a non-volatile solute, Refractometry, effect of acid strength on the hydrolysis of an ester.

Expected Learning Outcomes :

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

CO1: Determine the density, viscosity and surface tension of the liquid.

CO 2 : Estimate the percentage of the NaCl present in water-phenol system.

CO 3 : Calculate the molecular weight of the given solute.

CO 4 : Find the percentage composition of toluene in the given mixture.

CO 5 : Drive the rate constant of acid hydrolysis of methyl acetate.

CO 6 : Study the effect of acid strength on the rate constant.

CO 7 : Drive the catalytic strengths of HCl and H₂SO₄.

Course	Details
Code	BSCCHC 304
Title	Chemistry Paper-V
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Chart
	Presentation, Chem Rangoli
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of thermodynamics and kinetic aspects of metal complexes and its applications, different types of cells, electrodes and titrations, spectroscopy, stereochemistry of organic compounds, Vitamins and Harmones.

Expected Learning Outcomes :

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

CO 1 : Understand the analysis of metal complexes using different analytical methods.

CO 2 : Detect the practical applications of electrodes, Titrations, construction of electrodes.

- **CO 3 :** Find the functional group in organic molecules and position of atom using various spectroscopy techniques.
- **CO 4 :** Study the isomerism of organic compounds.

CO 5 : List out the Classification, structure and synthesis of bio organic molecules.

Course	Details
Code	BSCCHC 305
Title	Chemistry Paper-VI
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Chart
	Presentation, Extension Activity (Basic Science Lab)
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of elementary quantum mechanics, electronic spectra of transition metal complexes, thermoanalytical methods, Bioinorganic and organometallic chemistry, heterocyclic compounds

Expected Learning Outcomes :

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

CO 1 : Detect the dual nature of light using different theories.

CO 2: Identify the use of spectroscopic technics in transition metal complexes.

CO 3 : Understand the instrumentation and applications of thermoanalytical methods.

CO 4 : Understand the role of essential elements in biological system.

CO 5 : Divide the heterocyclic compound, structure preparation and its mechanism.

Details
BSCCHC 306
Chemistry Practical-V
Bachelor of Science (B.Sc.)
Third / Fifth
Group-II
02
48
04
04 Hours
CIA: 20 End Semester Exam: 80 Total: 100
04
Lectures with interactive sessions, Use of equipments, Demonstration of
the experiments, Brainstorming, Use of Charts.
One Internal Assessment Exam, One End Semester Exam

To introduce the concepts of Estimation of barium, copper, nickel, iron, adulteration, steam distillation, colorimetry.

Expected Learning Outcomes :

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

CO 1 : Estimate the Ba, Cu, Ni, Fe.

CO 2 : Determine the adulterants in food stuffs.

CO 3 : Separate o-nitrophenol and p-nitrophenol from a mixture.

CO 4 : Find the melting point of the given liquid.

CO 5: Verify the Beer-Lambert Law by Job's and Mole ratio method.

Course	Details
Code	BSCCHC 354
Title	Chemistry Paper-VII
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Chart
	Presentation, Outreach programme.
Evaluation Method	Assignments, Two Internal Assessment Exam, One End Semester Exam

To introduce the concepts of polymers, photo- radiation chemistry, biomolecules and their structure and reactivity, Mass spectroscopy.

Expected Learning Outcomes :

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

CO1: Preparation, properties structure applications of organic and inorganic polymers.

CO 2: Understand the classification and structure and preparation of biomolecules and its reaction.

CO 3: Application of organic and inorganic reaction using radiation and photo chemistry.

CO 4 : Determine the structural elucidation of carbohydrates.

CO 5 : Understand the mechanism of nucleophilic and electrophilic substitution.

CO 6 : Analyze the compounds using fragmentation techniques.

Course	Details
Code	BSCCHC 355
Title	Chemistry Paper-VIII
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of Models, Use of PPT
	Presentations, Brainstorming, Seminars and Presentations, Use of Chart
	Presentation, Industrial Visit.
Evaluation Method	Assignments Two Internal Assessment Exam. One End Semester Exam

To introduce the concepts of spectroscopy, physical properties and molecular structure, oxidation and reduction, consumer protection, nanometerials and fats oils.

Expected Learning Outcomes :

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

- **CO 1 :** Determination of functional group in organic molecules and position of atom using various spectroscopy techniques.
- **CO 2 :** Identify the structure of the molecules using different methods.

CO 3 : Analyze the redox cycle.

CO 4 : Find out the adulterants mixed in food items.

CO 5 : Understand the synthesis of organic compounds.

Course	Details
Code	BSCCHC 356
Title	Chemistry Practical-VI
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	04 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of equipments, Demonstration of
	the experiments, Brainstorming, Use of Charts.
Evaluation Method	Viva-voce, One Internal Assessment Exam, One End Semester Exam

To introduce the concepts of Conductometric method, potentiometric method, colorimetry, preparation of compounds and complexes.

Expected Learning Outcomes :

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

CO 1 : Find the strength of the given acid mixture.

CO 2 : Calculate the dissociation constant of weak acid.

CO 3 : Determine the equivalent conductance of NaCl.

CO 4 : Deduce the ionization constant of weak acid.

CO 5 : Calculate Concentration of the ion present in a solution.

CO 6 : Prepare the organic compounds and complexes.

Course	Details
Code	BSCCSC 101
Title	Digital Fundamentals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
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, practical sessions, Group Discussions,
	Seminars and Presentations
Evaluation Method	Assignments, Seminars, Group Discussions Two Internal Assessment
	Exam, One End Semester Exam

- To acquire knowledge about the fundamental concepts of computers and its peripherals.
- To understand the numbers systems, Boolean algebra, combinational and sequential circuits.

Expected Learning Outcomes :

- **CO 1 :** Identify the use of various parts of computer and peripherals.
- CO 2 : Understand the importance of number system in computer study
- **CO 3 :** Work out problems on Boolean algebra.
- **CO 4 :** Design the combination circuit such as adder, comparator, decoder, multiplexers etc. and verify its truth table.
- CO 5 : Design sequential circuits such as counters, registers and verify the truth table.

Course	Details
Code	BSCCSC 102
Title	Digital Logic and MS Office Lab
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA :10 End Semester Exam : 40 Total : 50
Total Modules	24
Pedagogy	Lectures with interactive sessions, Practicals sessions, Continuous
	Practical Assessment
Evaluation Method	Viva-Voce, Group Discussions, Assessment of Record work, Two
	Internal Assessment Exam in practicals, End Semester Exam,

- To design the various combination and switching circuits.
- To prepare documents using 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 : Construct the combination circuits such as half adder, full adder, multiplexer, comparator using the suitable logic gates.

CO 2 : Construct and realize the working of SR, D, JK flipflops and counters.

- **CO 3 :** Prepare word documents with various formatting features, mail merge, tables and drawing tools.
- **CO 4 :** Create spreadsheet with formulae, charts, filtering etc.

Course	Details
Code	BSCCSC 151
Title	Programming in C
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practicals, Assignments, Group
	Discussions, Seminars and Presentations, Solving the problems.
Evaluation Method	Viva-Voce, Group Discussions, Seminars, Internal Assessment Exams,
	One End Semester Exam.

- To develop problem solving skills.
- To obtain the knowledge about the structure of the programming language C and
- To develop the program writing and logical thinking 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 :** Apply programming knowledge to create solutions to challenging problems, including specifying, designing, implementing and validating solutions for new problems.
- **CO 3 :** Gain knowledge about decision making and looping concepts.
- **CO 4 :** Know the meaning and advantages of using arrays.

CO 5 : Design structures and files with examples.

Course	Details
Code	BSCCSC 152
Title	C Programming Lab
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	14
Pedagogy	Lectures with interactive sessions, practicals sessions, Continuous
	Practical Assessment
Evaluation Method	Viva-Voce, Group Discussions, Record Marks, Three Internal
	Assessment Exam, One End Semester Exam

- To have practical knowledge in C language.
- To understand various concepts in the C language.

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

CO 1 : Write the algorithm and flowchart for few problems.

- **CO 2 :** Apply programming knowledge to create solutions to challenging problems, including specifying, designing, implementing and validating solutions for few problems .
- **CO 3 :** Effectively use decision making and looping statements.

CO 4 : Implement program related to arrays.

CO 5 : Get acquainted with applications of structures and files.

Course	Details
Code	BSCCSC 201
Title	C++ and Data Structures
Programme	Bachelor of (B.Sc.)
Year/Semester	Second / Third
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, Group Discussions, Seminars and
	Presentations, work out the problems.
Evaluation Method	Viva-Voce, Seminars and Presentations, Solving the problems, Internal
	Assessment Exam, One End Semester Exam.

- To learn programming concept using C++.
- To understand the Object oriented concept.
- To understand the basic data structures and algorithms.
- Learn basic applications of Data structure .

Expected Learning Outcomes :

- **CO 1 :** Implement the logic programming in C++ and object oriented concepts.
- CO 2 : Identify need of data structure and its types.
- **CO 3 :** Apply various sorting and searching techniques.
- **CO 4 :** Understand the operations can be performed with stacks, queues, trees, linked lists and graphs.
- **CO 5 :** Write C++ programs the applications using these data structures.

Course	Details
Code	BSCCSC 202
Title	C++ and Data structure Lab
Programme	Bachelor of Science (B.Sc.)
Year/Semester	Second / Third
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	15
Pedagogy	Lectures with interactive sessions, practicals sessions, continuous practical assessment
Evaluation Method	Viva-Voce, Group Discussions, Record Marks Three Internal
	Assessment Exam, One End Semester Exam.
Learning Objectives :	

• To learn data structure concepts Practically.

• To understand various concepts.

Expected Learning Outcomes :

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

CO 1 : Sort the objects using various techniques.

CO 2 : Use various searching techniques.

CO 3 : Use queue, stack ,linked list with various basic operations.

CO 4 : Learning various operations on binary tree.

Course	Details
Code	BSCCSC 251
Title	Operating Systems and LINUX
Programme	Bachelor of Science (B.Sc.)
Year/Semester	Second / Fourth
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and
	Presentations, work out problems, survey
Evaluation Method	Viva-Voce, seminars and Presentations, Solving the problems, Internal
	Assessment Exam, One End Semester Exam.

- The basics of operating systems.
- The management of resources like processor, memory, device and information by operating system.
- Simple programs on operating system using Linux O.S.

Expected Learning Outcomes :

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

CO 1 : Understand the various concepts of operating system,

CO 2 : Categorize the various types of operating system.

CO 3 : Realize the management of memory, processor and devices and files in depth.

CO 4 : Work with the Linux environment.

CO 5 : Write and execute simple shell scripts in Linux environment.

Course	Details
Code	BSCCSC 252
Title	OS and Linux Lab
Programme	Bachelor of Science (B.Sc.)
Year/Semester	Second / Fourth
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	19
Pedagogy	Lectures with interactive sessions and practicals,
Evaluation Method	Viva-Voce, Group Discussions, Record book marks, Three Internal
	Assessment Exams, One End Semester Exam.
Learning Objectives :	•

- To learn the basics of operating systems.
- To learn the Linux commands.
- To study Shell scripts.

Expected Learning Outcomes :

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

CO 1: Create and remove folders and files, copy and rename files.

CO 2: Searching a pattern in a file.

- CO 3: Granting and removing privileges to the users for the files.
- CO 4: Creating groups.
- CO 5: Writing and executing simple shell scripts.

Course	Details
Code	BSCCSC 301
Title	Microprocessor Architecture and 8086 Programming
Programme	Bachelor of Science (B.Sc.)
Year/Semester	Third / Fifth
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions,
	Seminars and Presentations, work out problems, Mini projects
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam,
	seminars, Group Discussions

- To learn types of computer registers.
- To know memory devises and its organization, 8086 architecture.
- To learn 80x86 instructions and assembly language programming.
- To learn about software interrupts and interrupt Service Routines.

Expected Learning Outcomes :

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

CO 1 : Know the organization of computer memory.

CO 2 : Understand the architecture and directives used.

CO 3 : 80x86 instructions sets and codes required for programming.

CO 4 : Understand different types of interrupts, calls and its applications.

Course	Details
Code	CS302
Title	E 1.1 Database Concepts and Oracle
Programme	Bachelor of Science (B.Sc.)
Year/Semester	Third / Fifth
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
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,
	Seminars and Presentations, work out problems, Mini projects
Evaluation Method	Viva-Voce, seminars, Group Discussions Internal Assessment Exam,
	One End Semester Exam.

- To learn the basics concepts of database systems.
- To learn the oracle commands.
- To learn PL / SQL programs.

Expected Learning Outcomes :

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

CO1: Define database, explain characteristics and advantages of using database.

- **CO 2 :** Understand various models, relational model, relational algebra and design theory of relational database.
- CO 3 : Create tables, joining the tables, writing SQL queries and

CO 4 : Build PL / SQL programs including cursors, functions, procedures, triggers and packages.

CO 5 : Apply various constraints to the table columns.

Course	Details
Code	BSCCSC 303
Title	8086 MP Programming Lab and Oracle Lab
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	04 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	16
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions,
	Seminars and Presentations, work out problems, Mini projects
Evaluation Method	Viva-Voce, Internal Assessment Exam, University Semester Exam,
	seminars, Group Discussions
Learning Objectives •	

- To learn 8086 instructions sets and codes practically.
- To learn DBMS commands with various syntax.
- To learn the constraints.
- To learn PL / SQL programs.

Expected Learning Outcomes :

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

CO1: Use of computer registers and its instructions.

CO 2 : Execution of interrupts.

CO 3 : Use SQL commands.

CO 4 : Execute PL / SQL programs, Functions, Procedures.

CO 5: Apply Cursors, Triggers and Packages.

Course	Details
Code	BSCCSC 351
Title	Visual Basic.Net Programming
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third /Sixth
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA :20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and
	Presentations, work out problems, Mini projects.
Evaluation Method	Viva-Voce, Seminars, Group Discussions Internal Assessment Exam,
	One End Semester Exam.
Learning Objectives :	•

- To learn programming with graphical interface using object oriented concept.
- To design forms.
- To link with database.

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.

Course	Details
Code	BSCCSC 353
Title	E2.2 JAVA Programming
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Group Discussions, Seminars and
	Presentations, work out problems.
Evaluation Method	Viva-Voce, Seminars, Group Discussions, Internal Assessment Exam,
	One End Semester Exam
Learning Objectives :	·
• To learn the concepts	of Object Oriented Programming

• To learn the Object oriented programming using Java.

Expected Learning Outcomes :

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

CO 1 : Understand the concepts of OOP.

CO 2 : Fundamental concepts of Java.

CO 3 : Write the Java programs using the concepts of inheritance, interfaces.

CO 4 : Create packages.

CO 5 : Create multithreading, swings and applets programs.

Course	Details	
Code	BSCCSC 353	
Title	Visual Basic.NET Lab and Java Programming Lab	
Programme	Bachelor of Science (B.Sc.)	
Year/Semester	Third / Sixth	
Total Credits	02	
Total Contact Hours	48	
Contact Hours per Week	04	
Examination Duration	04 Hours	
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100	
Total Modules	16	
Pedagogy	Lectures with interactive sessions and practicals, Group Discussions,	
	Seminars and Presentations, work out problems, Mini projects	
Evaluation Method	Viva-Voce, Seminars, Group Discussions, Internal Assessment Exam,	
	One End Semester Exam,	
Learning Objective :		
To learn Java and VB.Net concepts practically		
Expected Learning Outcomes :		
Upon the completion of this course, the students will be able to :		
CO 1 : Class and objects		
CO 2 : Inheritance		
CO 3 : Applets, Threads		
CO 4 : Designing forms		
CO5 : Database connectivity with VB.Net.		

Course	Details
Code	BSCMTC 101
Title	Number Theory and Calculus
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-II
Total Credits	02
Total Contact Hours	72
Contact Hours per Week	06
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes:

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

CO 1 : Understand concept of Concavity-Curve sketching.

CO 2 : Calculate areas and volumes and average value of continuous function.

CO 3 : Understand the concepts of Reduction formula, Numerical integration and Trapezoidal rule.

CO 4 : Investigate curves, derivatives and integrals in new coordinate system.

CO 5 : Understand the concepts of Hyperbola, Parabolas and Ellipses.

Course	Details
Code	BSCMTC 151
Title	Calculus, Group Theory and Differential Equations
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
Total Credits	02
Total Contact Hours	72
Contact Hours per Week	06
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes :

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

CO 1 : Understand the concept of L'Hospital's rule and Polar co-ordinates.

CO 2 : Solve volume of a solid, pyramid and volume of wedge.

CO 3 : Understand binary operations, groups and subgroups.

CO 4 : Solve variable and homogeneous equations, Exact equations and Bernoulli's equation.

CO 5 : Investigate Application of differential equations and Non-linear equations.

Course	Details	
Code	BSCMTC 201	
Title	Number Theory, Partial Derivatives and Group Theory	
Programme	Bachelor of Science (B.Sc.)	
Year / Semester	Second / Third	
Туре	Group-II	
Total Credits	02	
Total Contact Hours	72	
Contact Hours per Week	06	
Examination Duration	03 hours	
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 1	00
Total Modules	05	
Pedagogy	Chalk and Talk method, Brainstorming, Seminars	
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam	

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes :

- **CO 1 :** Understand the properties of Congruences and Binary and Decimal representation of integers.
- **CO 2 :** Extend the basic ideas of Fermat's Theorem, Wilson's theorem and Euler's Phi function.
- CO 3 : Solve problems of Limits and Continuity and Partial derivatives.
- **CO 4 :** Investigate Directional derivatives, Gradient and tangents to level curves.
- CO 5 : Investigate method of First derivative ,critical and saddle points.

Course	Details
Code	BSCMTC 251
Title	Multiple Integrals, Complex variables, Sequences and Series
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	02
Total Contact Hours	72
Contact Hours per Week	06
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes:

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

CO 1 : Understand Theory of Congruences, Linear congruence and Chinese Remainder theorem.

CO 2 : Solve problems of double integrals and Triple integrals.

CO 3 : Extend the basic ideas of Polar and exponential forms, Limits, Continuity, Differentiability.

CO 4 : Investigate Harmonic functions, Elementary functions and Exponential functions.

CO 5 : Understand the concept of Infinite sequences, convergence and divergence.

Course	Details
Code	BSCMTC 301
Title	Differential Equations and Ring Theory
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	60
Contact Hours per Week	05
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes :

- **CO 1 :** Understand Particular integrals and method for finding particular integral.
- CO 2: Solve non-homogeneous differential equation and any second order equations.
- **CO3**: Understand the concept of Laplace transform and Inverse Transform.
- **CO 4 :** Investigate Rings, Integral domain ,Homomorphism and Isomorphism.
- **CO 5 :** Investigate method of representing a function as an infinite sum a powerful tool to study Functions.

Course	Details
Code	BSCMTC 302
Title	Numerical Analysis
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	60
Contact Hours per Week	05
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes :

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

- **CO 1 :** Study constructive methods for problems in numerical form.
- **CO 2 :** Use method of false position, Iteration method, Bisection method and Newton Raphson method depending upon needs.
- **CO3 :** Understand the concept of determinants and able to apply Cramer's Rule, Gauss Elimination and Gauss Jordan method.
- CO4: Relate differences of polynomials, Relation between the operators, finite differences.

CO5: Use Newton's forward and backward interpolation formula for interpolation.

Course	Details
Code	BSCMTC 351
Title	Partial Differential Equations, Fourier Series and Linear Algebra
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	60
Contact Hours per Week	05
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes :

- **CO 1 :** Solve Partial differential equations and Non-linear equations.
- **CO 2 :** Understand Periodic functions, Complex Fourier coefficients, Finite Fourier Transforms.
- **CO 3 :** Understand concepts of Vectorspace, Linear Dependence and Independence.
- **CO 4 :** Investigate Elementory row operations, Linear equations and Characteristic roots.
- **CO 5 :** Investigate method of representing a function as an infinite sum a powerful tool to study functions.

Course	Details
Code	BSCMTC 352
Title	Graph Theory
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-I
Total Credits	02
Total Contact Hours	60
Contact Hours per Week	05
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	05
Pedagogy	Chalk and Talk method, Brainstorming, Seminars
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam

- To foster experimental problem oriented and discovery learning of Mathematics.
- To make learning process student friendly.
- To orient students towards relating Mathematics applications.

Expected Learning Outcomes :

- **CO 1 :** Understand application of graphs, finite and infinite graphs.
- **CO 2 :** Understand Isomorphism, subgraphs, operation on graphs and Hamiltonian Paths and circuits.
- CO 3 : Connect graphs and vector space .
- **CO 4 :** Study cutsets, connectivity and separability.
- **CO 5 :** Study matrix representation of graphs.

Course	Details
Code	BSCBOC 101
Title	Protophyta and Phycology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning, and project based learning.
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam,
	Assignments, Field Visit Report.

To learn about salient features, thallus structure, Classification and reproduction in Viruses, Bacteria and Algae.

Expected Learning Outcomes :

- **CO 1 :** Gain knowledge on classification, mode of reproduction and detailed study of some important Algae.
- CO 2: Identify different bacteria based on morphology and mode of reproduction
- CO 3 : Impart knowledge about the general Characteristics, structure, reproduction, life history of Viruses.
- **CO 4 :** Acquire knowledge about the economic importance of Bacteria and algae.

Course	Details
Code	BSCBOC 151
Title	Mycology, Plant pathology and Bryophyta
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
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 session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning, and project based learning.
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam,
	Assignments, Field Visit Report, Seminar Presentation and Report.

- To learn about the Salient features, Classification, thallus structure, types of reproduction and economic importance of Fungi and Lichens.
- To know about the different diseases, causative agents and disease management in Plant pathology.
- To learn about the Life cycle of Bryophytes.

Expected Learning Outcomes :

- **CO 1 :** Learn the microscopic technique, familiarize with the external and internal structure of fungi and bryophytes.
- **CO 2 :** Apply the concept of mushroom cultivation.
- **CO3**: Understand Structure, Reproduction and Economic Importance of fungi, Lichens.
- **CO 4 :** Identify Causative agents, symptoms, and etiology and control measures of some plant diseases.
- **CO 5 :** Explore economic importance of fungi.
| Course | Details |
|------------------------|--|
| Code | BSCBOC 201 |
| Title | Pteridophyta, Gymnosperms, Histology and Anatomy |
| Programme | Bachelor of Science (B.Sc.) |
| Year / Semester | Second / Third |
| Туре | Group-II |
| 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 session, Use of power point presentation, use of |
| | over headed projector, Charts, Group discussion, peer teaching learning, |
| | study field visit, experimental learning, and project based learning. |
| Evaluation Method | Assignment, Two Internal Assessment Exam, One End Semester Exam, |
| | Assignments, field visit report, Seminar presentation and Report, Science |
| | article submission. |

- To learn about the general characteristics, classification, structure, life history and economic importance of Pteridophytes and Gymnosperms.
- To study about the Histology and Anatomy.

Expected Learning Outcomes :

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

CO1: Gain knowledge about life cycles of gymnosperm and pteridophyte plants.

- **CO 2 :** Explain about fossils and fossilization.
- **CO 3 :** Understand about geological time scale.
- CO 4 : Identify different types of tissues in plants and its theory.

CO 5 : Learn about the Internal structure of Root, Stem and leaf of Dicot and Monocot.

Course	Details
Code	BSCBOC 251
Title	Cell biology, Molecular biology and Genetics
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning, and project based learning.
Evaluation Method	Assignment, Two Internal Assessment, Exam, One End Semester Exam,
	Assignments, field visit report, Seminar presentation and Report.

To learn structure of plant cell, cell organelle and their function, cell division and chromosomes, structure chemistry and expression of gene, genetics, genetic variation and extra nuclear genome.

Expected Learning Outcomes :

- **CO 1 :** Acquire knowledge on ultrastructure of cell.
- **CO 2 :** To describe cell division in plants.
- **CO 3 :** Interpret the Mendel's principles, acquire knowledge on cytoplasmic inheritance and sex linked inheritance.
- **CO 4 :** To have knowledge of the nature and function of genes, processes of inheritance.
- **CO 5 :** To describe linkage, crossing over and mutations.
- **CO 6 :** Figure out genetic variations and extra nuclear genome.

Course	Details
Code	BSCBOC 301
Title	Plant Physiology-I and Ecology-I
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	04
Pedagogy	Lectures with interactive session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning, and project based learning.
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam,
	Assignments, field visit report, Seminar presentation and Report, Science
	article submission.

- To learn the ecological factors and adaptations.
- To study the Plant water relations.
- To learn about the Plant and nutrition.
- To study the metabolism in plants.
- To study the plant and environment.

Expected Learning Outcomes :

- **CO 1 :** Explain the role of micro nutrients in plant growth and development.
- **CO 2 :** Relate photosynthesis with the formation of primary and secondary metabolites.
- **CO 3 :** Understand ecological relationships between organisms and their environment.
- **CO 4 :** Identify diversity of life forms in an ecosystem.
- **CO 5 :** Distinguish the fundamentals of enzyme nomenclature, classification and various applications of enzymes that can benefit to human life.

Course	Details
Code	BSCBO 302
Title	Cell Biology, Molecular Biology and Genetics
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning and project based learning.
Evaluation Method	Assignment, Two Internal Assessment, Exam, One End Semester Exam,
	Assignments, field visit report, Seminar Presentation and Report.

To learn structure of plant cell, cell organelle and their function, cell division and chromosomes, structure chemistry and expression of gene, genetics, genetic variation and extra nuclear genome.

Expected Learning Outcomes :

- **CO 1 :** Acquire knowledge on ultrastructure of cell.
- **CO 2 :** Describe cell division in plants.
- **CO 3 :** Interpret the Mendel's principles, acquire knowledge on cytoplasmic inheritance and sex linked inheritance.
- CO 4: Acquire knowledge of the nature and function of genes, processes of inheritance.
- **CO 5 :** Describe linkage, crossing over and mutations.
- **CO 6 :** Figure out genetic variations and extra nuclear genome.

Course	Details
Code	BSCBOC 351
Title	Plant Physiology-II and Ecology-II
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning, Project based learning.
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam,
	Assignments, field visit report, Seminar presentation and Report, Science
	article submission.

To learn about the different plant functions, Mechanism of photosynthesis and respiration, role of plant growth regulators, To know about the environment and plant.

Expected Learning Outcomes :

- **CO 1:** Gain knowledge about chloroplast structure, photosynthetic pigments, the path of energy from the light reactions through Calvin cycle. Students are able to understand the process of translocation of organic solutes in plants.
- **CO 2 :** Understand the energy releasing steps in Glycolysis. Students will be familiar about the mechanism of respiration.
- **CO 3 :** Acquire knowledge in plant growth regulator and its uses, understand the physiology of flowering and photoperiodism.
- **CO 4 :** Have knowledge about ecological adaptation and Phytogeography.

Course	Details
Code	BSCBOC 352
Title	Anatomy, Microbiology, Biotechnology and Plant Propagation
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive session, Use of power point presentation, use of
	over headed projector, Charts, Group discussion, peer teaching learning,
	study field visit, experimental learning, and Project based learning.
Evaluation Method	Assignment, Two Internal Assessment Exam, One End Semester Exam,
	Assignments, field visit report, Seminar presentation and Report, Science
	article submission

- To learn about Plant anatomy.
- To learn about the industrial application of microbiology.
- To know about the Plant biotechnology and Plant propagation, transgenic technology for the improvement of quality and quantity of plant and thereby product.

Expected Learning Outcomes :

- **CO 1 :** Get the detail knowledge about modern strategies applied in Plant Breeding for crop improvement i.e., Mass selection, Pure line Selection and Clonal selection.
- **CO 2 :** Figure out practical application of growth regulators in the field of agriculture and horticulture.
- **CO 3 :** Understand the importance of microbes in human life.
- **CO 4 :** To study the techniques of production of new superior crop verities.
- CO 5 : Understand the genetic material at molecular level and tissue culture.

Course	Details
Code	BSCBOC 102
Title	Protophyta and Phycology - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10 End Semester Exam : 40 Total : 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning, and
	experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam,
	Algal specimen and field note submission
Learning Objectives :	·
Microscopic observation and identification of Bacteria and Algae.	
Expected Learning Outc	omes :

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

CO 1 : Understand the working principle of compound and dissection microscopes.

CO 2 : Distinguish the morphology of bacterial cells

CO 3 : Mount and identify the microscopic algae.

CO 4 : Identify macro algae.

Course	Details
Code	BSCBOC 152
Title	Mycology, Plant Pathology and Bryophyta - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning,
	experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam,
	fungal specimen and field note submission.

Microscopic observation and identification of Fungi, observation and study of crop plants infected by fungi included in the syllabus, Microscopic observation and identification of Bryophytes and study of thallus structure.

Expected Learning Outcomes :

- CO 1 : Mount, identify and study the mycelilial structure of fungi
- CO 2: Identify different types of macrofungi and lichens.
- **CO 3 :** Understand the Causative agents, symptoms, etiology and control measures of some fungal disease of plants
- **CO 4 :** Mount, identify and study the thallus structure and reproductive structures of certain Bryophytes.
- CO 5 : Understand the method of preparation of permanent slides.

Course	Details
Code	BSCBOC 202
Title	Pteridophyta, Gymnosperms, Histology and Anatomy - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 10 End Semester Exam: 40 Total: 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning, and
	experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam, plant
	specimen and field note submission

To mount, identify and study the sporophyte and reproductive structure of certain Pteridophytes and Gymnosperms. To kwon about the tissues and internal structure of plants.

Expected Learning Outcomes :

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

- **CO 1 :** Have an idea about mounting techniques, sectioning and identification of vegetative and reproductive parts of certain pteridophytes.
- **CO 2 :** Have an idea about mounting techniques, sectioning and identification of vegetative and reproductive parts of certain gymnosperms.

CO 3 : Identify types of tissues in plants.

CO 4 : Understand the internal structure of stem, root and leaf.

Course	Details
Code	BSCBOC 252
Title	Cell Biology, Molecular Biology and Genetics - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of over headed projector, Study field visit, experimental learning, experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam, herbarium and field note submission.

To study the Cell division by mitosis and meiosis, To study the genetic problems. Preparation of permanent slide of plant specimen.

Expected Learning Outcomes :

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

CO 1 : Observe mitosis cell division through the cytological preparation from onion root tips..

CO 2 : Working out problems related to genetics will be helpful to students, to solve the problems in plant biology

CO 3 : Acquire knowledge on ultrastructure of cell.

CO 4 : Prepare the permanent slide of given plant specimen.

Course	Details
Code	BSCBOC 303
Title	Plant Physiology-I and Ecology-I Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 20 End Semester Exam : 80 Total : 100
Total Modules	20
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning, and
	experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam,
	project report submission.

- To learn about osmosis, absorption and transpiration with major and minor experiments.
- To know about the estimation of carbohydrate and proteins.
- To understand the different types of ecosystem of local area by project work.

Expected Learning Outcomes :

- **CO 1 :** Understand the practical aspects of osmosis, absorption and transpiration.
- **CO 2 :** Acquires a general knowledge of the physical, chemical properties and metabolism of carbohydrates and lipids in living system.
- **CO 3 :** Estimate carbohydrate and protein in given unknown sample.
- **CO 4 :** Understand the local ecosystem by undertaking project work.

Course	Details
Code	BSCBOC 252
Title	Cell Biology, Molecular Biology and Genetics - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning, and
	experiment demonstration.
Evaluation Method	Records, One Preparatory practical Exam, One End Semester Exam,
	herbarium and field note submission.
Learning Objectives :	

- To study the Cell division by mitosis and meiosis.
- To study the genetic problems.
- To prepare permanent slide of plant specimen.

Expected Learning Outcomes :

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

CO 1 : Observe mitosis cell division through the cytological preparation from onion root tips..

CO 2 : Work out problems related to genetics.

CO 3 : Acquire knowledge on ultrastructure of cell.

CO 4 : Prepare the permanent slide of given plant specimen

Course	Details
Code	BSCBOC 353
Title	Plant Physiology-II and Ecology-II Practicals
Programme	Bachelor of Science
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning, and
	experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam,
	herbarium and field note submission.

- To learn about the photosynthesis and respiration by minor and major experiments.
- To mount and identify ecological specimens.

Expected Learning Outcomes :

- **CO 1 :** Observe the liberation of oxygen during photosynthesis by different major and minor Experiments.
- CO 2 : Analyze the end products of respiration in plants by different major and minor experiments.
- **CO 3 :** Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic Respiration.
- **CO 4 :** Setup the apparatus and analyze the results of major and minor experiments.

Course	Details
Code	BSCBO 354
Title	Anatomy, Microbiology, Biotechnology and Plant Propagation - Practicals
Programme	BZC
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	01
Total Contact Hours	30
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10 End Semester Exam : 40 Total : 50
Total Modules	10
Pedagogy	Use of plant specimen, charts, Use of power point presentation, use of
	over headed projector, Study field visit, experimental learning, and
	experiment demonstration.
Evaluation Method	Records, one Preparatory practical Exam, One End Semester Exam,
	herbarium and field note submission.

- To know about the internal part of plant.
- To know about fermented food.
- To know about the instrumentation in biotechnology and microbiology and its application.
- To know about the Plant propagation techniques.

Expected Learning Outcomes :

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

CO 1 : Understand the concept, principle and types of sterilization methods.

- **CO 2 :** Understand the fermented food.
- **CO 3 :** Understand the principle and basic protocols for Plant Tissue Culture.
- **CO 4 :** Realize the industrial application of microbiology and biotechnology.
- **CO 5 :** Realize the application and importance of plant tissue culture and transgenic plants.

Course	Details
Code	BSCZOC 102
Title	Animal Diversity-I
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-I
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, Use of PPT Presentations, Group
	Discussions, use of OHP, use of models and museum specimens, CD's,
	field oriented project.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam

- To introduce general characters of the phylum and classification up to classes with distinctive characters of invertebrates.
- To introduce the principles of Binomial nomenclature and Linnaean hierarchy.
- To describe the biological hotspots with reference to India.

Expected Learning Outcomes :

- **CO 1 :** Represent the outline classification of invertebrates enumerating characteristic features of different phyla.
- **CO 2 :** Identify and classify invertebrates scientifically.
- **CO 3 :** Differentiate the invertebrates based on their coelom, body symmetry, metamerism, cephalisation and vital organs.
- **CO 4 :** Compare the water vascular system of Echinodermata with that of canal system of Porifera.
- **CO 5 :** Recognize the diversity from Protozoa to Echinodermata.

Course	Details
Code	BSCZOC 103
Title	Animal Diversity-I Practical
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-I
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 10End Semester Exam: 40Total: 50
Total Modules	11
Pedagogy	Lectures with interactive sessions, Use of PPT and OHP Presentations,
	Group Discussions, use of models/spotters/specimens, Mounting and
	dissection of animal system.
Evaluation Method	Continuous evaluation, Assignment, Record book, preparatory practical
	exam, One End Semester Exam.

• To identify, classify and enumerate the external features of the commonly available invertebrate specimens.

• To demonstrate the dissection of animal system and to prepare the whole mount of Prawn, Leech, Cockroach and Earthworm.

Expected Learning Outcomes :

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

CO 1: Identify with scientific classification of commonly available invertebrates specimens .

CO 2 : Draw the labelled diagrams of the identified specimens.

CO 3 : Demonstrate the dissected animal system.

CO 4 : Prepare the whole mount of Cnidarian colonies and Crustacean larva.

CO 5 : Prepare and observe hay infusion culture to study living protozoans.

Course	Details
Code	BSCZOC 152
Title	Animal Diversity-II (Chordata)
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
Total Credits	02
Total Contact Hours	48
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Use of OHP presentation, use of charts, use of models and
	museum specimens.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam.

- To introduce the classification of phylum chordate up to classes giving the important characters.
- To discuss the evolutionary connecting link, affinities between the different classes of chordate.

Expected Learning Outcomes:

- **CO 1 :** Represent the outline classification of vertebrates enumerating characteristic features of different sub phyla, division, super class and classes.
- **CO 2 :** Compare the morphology of fish, amphibians, reptilians and mammalians.
- **CO 3 :** Understand the aerial adaptation in aves, dentition in mammals and aquatic adaptation in fish.
- **CO 4 :** Understand the vertebrate evolutionary tree.

Course	Details
Code	BSCZOC 153
Title	Animal diversity-II (Chordata) Practical
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-II
Total Credits	01
Total Contact Hours	36
Contact Hours per	03
Week	
Examination Duration	03
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	06
Pedagogy	Spotters, Lectures with interactive sessions, Use of PPT and OHP
	Presentations, Group Discussions, use of charts / model / specimens.
Evaluation Method	Continuous evaluation, Viva-Voce, Record book, Preparatory practical
	exam, One End Semester Exam

- To identify, classify the morphological features of the commonly available vertebral specimens.
- To demonstrate the dissection of mouse or shark and mounting of fish scales.

Expected Learning Outcomes:

- **CO 1 :** Identify with scientific classification of commonly available chordate specimens.
- **CO 2 :** Demonstrate the digestive and reproductive system of mouse and afferent, cranial nerves of shark.
- **CO 3 :** Draw the labelled diagrams of the identified specimens.
- CO 4: Develop the skill of mounting fish scales Placoid, Ctenoid and Cycloid.

Course	Details
Code	BSCZOC 202
Title	Physiology, Biochemistry and Immunology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-II
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, Use of PPT Presentations/ Charts/
	Models, Use of Educative Videos, Group Discussions, Brainstorming,
	Case Analysis, Experimental methods, Seminars and Presentations,
	Assignment.
Evaluation Method	Viva-Voce, Assignment, Seminars and Presentations, Two Internal
	Assessment Exam, One End Semester Exam.

- To introduce physiological concepts and to study the functions of body systems.
- To study the core principles of Biochemistry and Immunological processes that governs complex biological system.

Expected Learning Outcomes :

- **CO 1 :** Enhance their knowledge and appreciate working mechanism of the body.
- **CO 2 :** Understand the important functions of physiological systems.
- **CO 3 :** Understand the hormones and its interaction with physiological system.
- **CO 4 :** Recognize and identify biological significance of organic compounds.
- **CO 5 :** Describe the role of immune system.

Course	Details
Code	BSCZOC 203
Title	Bhysiology, Biochemistry and Immunology - Practical
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-II
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	15
Pedagogy	Brainstorming, Group Discussions, Use of PPT Presentations/ Charts/
	Models, Experimental methods.
Evaluation Method	Continuous evaluation, Practical work, Record book, One Preparatory
	Practical Internal Exam, One End Semester Exam.

To expand practical knowledge on some areas in Physiology of organisms, Biochemistry and Immunology.

Expected Learning Outcomes :

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

CO1: Conduct, analyze and report on physiological experiments.

CO 2 : Perform, identify and report on experiments in Biochemistry.

CO 3 : Identify the major types of cells in blood smear.

CO 4 : Understand the principle of reactions of physiological and biochemical experiments.

Course	Details
Code	BSCZOC 252
Title	Histology, Animal Behaviour, Applied Zoology and Toxicology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
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	11
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Brainstorming, Case Analysis, Experimental methods,
	Seminars and Presentations, Assignment works, Field visits.
Evaluation Method	Viva-Voce, Assignment, Seminars and Presentations, Two Internal
	Assessment Exam, One End Semester Exam.

- To acquire basic knowledge in histology and to understand the properties and functions of various cell types, tissues and organs.
- To understand the key concepts in animal behavior.
- To impart basic knowledge on animal husbandry and value-added products of animals.
- To create awareness on self-employment opportunity.

Expected Learning Outcomes :

- **CO 1**: Describe the general histological features of endocrine glands, salivary gland and tongue.
- **CO 2 :** List and describe the factors that influence animal behavior and methods of studying the behavior.
- **CO 3 :** Identify the different breeds of cattle, poultry birds and understand the housing management.
- **CO 4 :** Understand realistic and practical applications of managements of different animal husbandry.
- **CO 5 :** Manage organic waste through Vermitechnology and Appreciate organic farming.
- **CO 6 :** Understand toxicology and associated terms.

Course	Details
Code	BZCZOC 253
Title	Histology, Animal Behaviour, Applied Zoology and Toxicology - Practical
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-II
Total Credits	01
Total Contact Hours	36
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	11
Pedagogy	Brainstorming, Group Discussions, Use of PPT Presentations / Charts /
	Models, Experimental methods.
Evaluation Method	Continuous evaluation, Practical work, Record book, Project work, One
	Preparatory Practical Internal Exam, One End Semester Exam.

To expand practical knowledge on some areas in Histology, Animal Behavior, Applied Zoology and Toxicology.

Expected Learning Outcomes :

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

CO 1 : Identify the histological features of various endocrine glands by microscopic examination.

CO 2 : Prepare permanent slides under histological examination.

CO 3 : Understand Animal behaviour in honey bees, birds and fishes.

CO 4 : Appreciates the importance of value added products of animals.

CO 5 : Perform field oriented projects.

Course	Details
Code	BSCZOC 304
Title	Cell Biology and Biotechnology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	06
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Brainstorming, Experimental methods, Seminars and
	Presentations, Assignment works.
Evaluation Method	Viva-Voce, Assignment, Seminars and Presentations, Two Internal
	Assessment Exam, One End Semester Exam.

- To provide an overview of cell structure and function at molecular level.
- To introduce to basic molecular biological concepts and techniques used in the fields of Genetic engineering and Biotechnology.

Expected Outcomes :

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

CO 1 : Describe cell organelles, cellular membrane structure and its functions.

CO 2 : Demonstrate the process of DNA replication, Transcription and Translation.

CO 3 : Understands the concepts of Cancer Biology, its causes and treatment strategies.

- **CO 4 :** Understand the key concepts of Genetic engineering and demonstrate basic principles of various techniques involved in Biotechnology.
- **CO 5 :** Appreciate the applications of biotechnology in environmental, industrial and in disease prevention and diagnosis.

Course	Details
Code	BZCZOC 306
Title	Cell Biology and Biotechnology - Practical
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	09
Pedagogy	Brainstorming, Group Discussions, Use of PPT Presentations / Charts /
	Models, Experimental methods.
Evaluation Method	Continuous evaluation, Practical work, Record book, Project work, One
	Preparatory Practical Internal Exam, One End Semester Exam.
Learning Objectives :	
To expand practical knowledge on some areas in Cell Biology and Biotechnology.	
Expected Learning Outco	omes :

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

CO 1 : Observe, identify and report different stages of cell division.

CO 2 : Prepare temporary slides and study stages of mitosis and meiosis.

CO 3 : Demonstrate the extraction of DNA by centrifugation method.

CO 4 : Demonstrate the Salivary gland chromosomes of Drosophila.

Course	Details
Code	BZCZOC 305
Title	Genetics, Biostatics, Evolution and Paleontology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Fifth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Seminars and Presentations, use of OHP, use of models,
	CD's, field oriented project.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam.

- To study laws of inheritance and interaction of genes, multiple alles, polygenic inheritance and pleiotrophism.
- To study linkage and gene mapping, sex determination and sex linked inheritance, gene mutation and DNA repair.
- To introduce Human genetics and Biostatistics, evolution and palaeontology.

Expected Learning Outcomes :

- **CO1**: Understand Mendelian and non-Mendelian inheritance.
- **CO 2 :** Solve genetic and biostatistics problems.
- CO 3: Define and classify genetic disorder, gene mutations and sex determination.
- **CO 4 :** Discuss the linkage groups and gene frequency.
- **CO 5 :** Describe the concept and theories of origin of life.

Course	Details
Code	BZCZOC 307
Title	Genetics, Biostastics, Evolution and Paleontology - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Final / Fifth
Туре	Group-II
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	08
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Seminars and Presentations, use of OHP, use of models,
	CD's, field oriented project.
Evaluation Method	Continuous evaluation, Viva-Voce, Assignment, Two Internal
	Assessment Exam, One End Semester Exam

- To study the experiments on Drosophila.
- To display Barr body in Buccal smear.
- To detect the blood group.
- To solve genetics and biostastiscs problems.
- To study on evolution and palaeontology.

Expected Learning Outcomes :

- **CO 1 :** Solve the genetics and biostatistics problems.
- CO 2 : Mount sex comb, genital plate of Drosophila and identify its mutants.
- CO 3 : Determine the sex of individual on the basis of Barr Body using stained Buccal mucosal Cells.
- **CO 4 :** Perform blood typing and identify different types of blood group and Rh factor.
- **CO 5 :** Understand the phylogenetic relationship among organisms.

Course	Details
Code	BZCZOC 354
Title	Reproductive Biology and Developmental Biology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
Contact Hours per Week	03
Examination Duration	03 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	04
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Seminars and Presentations, use of OHP, use of models.
Evaluation Method	Viva-Voce, Assignment, Two Internal Assessment Exam, One End
	Semester Exam

- To introduce reproductive and developmental biology.
- To understand the structure of reproductive system in mammals.
- To understand the laws of cleavage, structure of blastula, fate map, notogenesis in frog and chick.
- To understand the structure of placenatas in chick and in different mammals.
- To understand concepts of twins and multiple births.

Expected Learning Outcomes :

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

CO 1 : Describe the structure of male and female reproductive system ,identifying their functions.

 ${\bf CO}\,{\bf 2}$: Understand the concept and mechanism of fertilization .

CO 3 : Describe the effect of yolk on cleavage and differentiated the types of cleavage.

CO 4: Explain the events of gastrulation and organogenesis.

CO 5 : Differentiate the animals placenta based to morphological and histological classification.

Course	Details
Code	BZCZOC 356
Title	Reproductive biology and Developmental Biology - Practicals
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	03 Hours
Max. Marks	CIA: 10 End Semester Exam: 40 Total: 50
Total Modules	06
Pedagogy	Lectures with interactive sessions, Use of PPT Presentations, Group
	Discussions, Seminars and Presentations, use of OHP, use of models,
	sporters, permanent slides.
Evaluation Method	Continuous evaluation, Viva-Voce, preparatory practical exam,
	submission of temporary mounted slides, One End Semester Exam.
Learning Objectives :	
• To study the whole mo	ount preparation.
• To study the permaner	nt slides of frog and chick.

• To study the histology of placenta.

Expected Learning Outcomes :

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

CO 1 : Prepare the whole mount and identifying the specimens.

CO 2 : Differentiate the morphological and histological structure of placenta.

CO 3 : Identify the developmental stages of frog and chick.

CO 4 : Compare the embryonic development of chick.

CO 5 : Describe the different types of sperm and egg in animals.

Course	Details
Code	BZCZOC 355
Title	Environmental Biology and Wildlife Biology
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	02
Total Contact Hours	40
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, Use of PPT Presentations, Group
	Discussions, Brainstorming, Case Analysis, Experimental methods,
	Seminars and Presentations, Assignment works, Field visits.
Evaluation Method	Viva-Voce, Assignment, Seminars and Presentations, Two Internal
	Assessment Exam, One End Semester Exam.

- To describe the interaction between organisms and environment.
- To introduce Environmental pollution with reference to India and Toxicology.
- To introduce history and importance of Wildlife Conservation and projects implemented to protect the endangered species.

Expected Outcomes :

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

CO1: Understand ecological relationship between organisms and their environment.

- **CO 2 :** Understand the types of ecosystem, population and community characteristics.
- CO 3 : Characterize different types of pollutants and specify its effects over ecosystem.
- **CO 4 :** Understand toxicology and associated terms.
- **CO 5 :** Analyze the reason for endangerment and appreciate the wildlife conservation and management.

Course	Details
Code	BSCZOC 357
Title	Project work - Environmental Biology, Toxicology and Wildlife
	Biology - Practical
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Third / Sixth
Туре	Group-II
Total Credits	01
Total Contact Hours	24
Contact Hours per Week	02
Examination Duration	03 Hours
Max. Marks	CIA : 10End Semester Exam : 40Total : 50
Total Modules	-NA-
Pedagogy	Group Discussions, Use of PPT Presentations / Charts / Models
Evaluation Method	Continuous evaluation, Practical work, Project work, Dissertation, One
	Preparatory Practical Internal Exam, One End Semester Exam

To introduce field-oriented projects and acquire practical knowledge on the implementation of the concepts studied under Environmental Biology, Toxicology and Wildlife Biology.

Expected Learning Outcomes :

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

CO 1 : Perform field oriented projects.

CO 2 : Apply knowledge and understanding in collecting data regarding projects.

CO 3 : Understand the components of research projects.

CO 4 : Collect, Record, Interpret and Analyze the obtained data.

CO 5 : Prepare dissertation.

Course	Details
Code	BSCCIF 102
Title	Constitution of India
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / First
Туре	Group-III : Foundation Course
Total Credits	02
Total Contact Hours	64
Contact Hours per Week	04
Examination Duration	03 Hours
Max. Marks	CIA : 20End Semester Exam : 80Total : 100
Total Modules	08
Pedagogy	Lectures with interactive sessions, Debate, Group Discussions.
Evaluation Method	Viva-Voce, Assignments, Two Internal Assessment Exam, One End
	Semester Examination.

To enable the students to :

- Acquire a complete and Detailed Understanding on Constitution of India.
- Elicit the knowledge on Constitutional Issues.

Expected Learning Outcomes :

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

CO 1 : Understand the principle and structure 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 Role of Judiciary in India.

Course	Details
Code	BSCHGE 152
Title	Human Rights, Gender Equity and Environment Studies
Programme	Bachelor of Science (B.Sc.)
Year / Semester	First / Second
Туре	Group-III : Foundation Course
Total Credits	02
Total Contact Hours	64
Contact Hours per Week	4
Examination Duration	3 Hours
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	08
Pedagogy	Lectures with interactive sessions, Debate, Group Discussions, Viva-
	Voce, Interaction with Human Rights Activists, Environmentalists.
Evaluation Method	Viva-Voce, Assignments, Two Internal Assessment Exam, One End
	Semester Examination.

To enable the students to :

- Acquire awareness on Human Rights issues and concerns.
- Enhance citizenship sensitivity and initiatives.
- To understand the basic concepts of Gender Equity.
- To generate awareness on Gender related Issues and violence.
- To enrich the knowledge on Environmental Studies.
- To create awareness on environmental pollution, resource conservation and management.

Expected Learning Outcomes :

- **CO 1 :** Enrich the knowledge on Human Rights and Human Values.
- **CO 2 :** Promote and protect Human Rights in India.
- CO 3 : Generate awareness on Gender in equity, Gender Discrimination, Gender Violence.
- **CO 4 :** Gain knowledge on measures adopted and implemented for Gender Equity.
- **CO 5 :** Enrich the knowledge on Environment, environmental pollution, legislative measures etc.

Course	Details
Code	BSCGSG 201
Title	General Studies
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Third
Туре	Group-III : Compulsory Course
Total Credits	02
Total Contact Hours	64
Contact Hours per Week	04
Examination Duration	03
Max. Marks	CIA: 20 End Semester Exam: 80 Total: 100
Total Modules	08
Pedagogy	Lectures with interactive sessions, Debate, Group discussions, , Quiz on
	General Knowledge.
Evaluation Method	Viva-Voce, Assignments, Two Internal Assessment Exam, One End
	Semester Examination.

To enable the students to :

- Acquaint with basic information on the world around us.
- Acquire basic knowledge of General Science, Social Science and things that affect us.
- Face the challenges of competitive examinations.

Expected Learning Outcomes :

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

CO 1 : Enrich the knowledge on General Science and Social Science.

CO 2 : Provide Basic knowledge on New trends / Developments in the World.

CO 3 : Provide Information with regard to the contribution made by Eminent Indians.

CO 4 : Appear for competitive Examination.

CO 5 : Provide perspectives of the world around us.

Course	Details
Code	BSCIDI 251
Title	Human Resources Development
Programme	Bachelor of Science (B.Sc.)
Year / Semester	Second / Fourth
Туре	Group-III : Compulsory Paper
Total Credits	02
Total Contact Hours	64
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, Debate, Group Discussions
Evaluation Method	Viva-Voce, Assignments, Two Internal Assessment Exam, One End
	Semester Examination.

To enable the students to :

- Gain information on broader understanding of Human Resources Development concepts, processes, outcomes.
- Focus on HRD training Developments.

Expected Learning Outcomes :

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

- **CO 1 :** Gain knowledge on Basic Elements of Human Resources Developments.
- CO 2: Focus on components and Focuses on HRD.

CO 3 : Examine the functions HRD.

CO 4 : Enrich the knowledge on New trends in HRD.

CO 5 : Implement HRD philosophy and HRD Interventions like training and Development.