CO PO PSO OF ENGLISH DEPARTMENT
SESSION 2023-2024
M.A. ENGLISH LITERATURE
Semester-First, Second, Third & Fourth

OBJECTIVES OF THE PROGRAMME:

The college follows Hem Chand Yadav University, Durg syllabus for Masters in English Literature. The objectives of the prescribed syllabus are:

- To develop an aesthetic sense and love for literature in learners.
- To help them appreciate ancient classic texts.
- To encourage them towards research and further learning.
- To provide learners with critical faculty.

PROGRAMME OUTCOME:

The English Literature programme ensures:

- Critical learning of the texts.
- Analysis of the text for proper understanding and interpretation.
- Representation of the text in literary usage.
- Appreciate old texts
- Can differentiate between texts of different genre and continents. Will able to use the text artistry in their language.

COURSE OUTCOME:

The prescribed MA English Literature course has been designed to acknowledgestudents regarding different genres and the background of the English Literature. The course also acquaints students of the emergence of the English literature, socio-politicalchangesand major influences. Moreover, the course describes about the major changes and developments in the English Literature, effects of the colonization, translation, and spread of the English language and English literature with an impression of the English culture on the colonies.

The Master of Arts course shall be spread over four semesters. In each semester, there shall be theory courses and. Written examinations shall be completed by the end of the each Semester. There shall be numerical marking in evaluation. A candidate who has obtained a

Bachelor's degree of this University or of a statutory University recognized by this university as equivalent to the Bachelor's Degree shall be eligible to seek admission in MA courses.

Every candidate thus admitted shall pursue regularly the prescribed courses in each of the four semesters successively. The Master's Degree shall be awarded to those candidates who have obtained at least 36% marks in cumulative aggregate in eachoffour semesters in theory and practical courses separately and a minimum of 20% qualifying marks in each theory course. The successful candidates shall be placed in divisionsonthe following basis:

- An aggregate of 60% or above – I Division
- An aggregate of 48% or above – II Division
- An aggregate of 36% or above – III Division

Candidates failing to appear or securing less than 36% aggregate or obtaining less than 20% marks in any of the theory course of semester examinations shall be allowed to pursue the courses for the next following semester and to appear at the examination simultaneously in the course for that semester and any course of the previous semester, which he/she has not cleared. Failure in all the four papers shall have to re-appear in the same ATKT provision shall be in three papers of one semester & maximum three attempts only i.e. (1 main + 2 ATKT). Failure to secure 36% aggregate or to obtain qualifying marks of 20% in each course in two successive semester examinations, in addition to main examination, shall if so facto disqualify a candidate for admission to the next higher semester or for re-examination.

Syllabus and Marking Scheme for First/Second/Third/Fourth Semester

Paper No.	Title of the Paper	Marks Allotted in Theory		Marks Allotted in Internal Assessment	
		Max.	Min.	Max.	Min.
I	POETRY-I	80	16	20	04
II	DRAMA-I	80	16	20	04
III	PROSE-I	80	16	20	04
IV	FICTION-I	80	16	20	04
V	HISTORY OF ENGLISH LITERATURE	80	16	20	04
	Total	400		100	

Paper No.	Title of the Paper	Marks Allotted in Theory		Marks Allotted in Internal Assessment	
		Max.	Min.	Max.	Min.
I	POETRY-II	80	16	20	04
II	DRAMA-II	80	16	20	04
III	PROSE-II	80	16	20	04
IV	FICTION-II	80	16	20	04
V	MODERNIST POETRY	80	16	20	04
	Total	400		100	

Paper No.	Title of the Paper	Marks Allotted in Theory		Marks Allotted in Internal Assessment	
		Max.	Min.	Max.	Min.
I	CRITICAL THEORY-I	80	16	20	04
II	INDIAN WRITING IN ENGLISH-I	80	16	20	04
III	AMERICAN LITERATURE-I	80	16	20	04
IV	COLONIAL AND POST COLONIAL STUDIES-I	80	16	20	04
V	LINGUISTICS-I	80	16	20	04
	Total	400		100	

Paper No.	Title of the Paper	Marks Allotted in Theory		Marks Allotted in Internal Assessment	
		Max.	Min.	Max.	Min.
I	CRITICAL THEORY-II	80	16	20	04
II	INDIAN WRITING IN ENGLISH-II	80	16	20	04
III	AMERICAN LITERATURE-II	80	16	20	04
IV	COLONIAL AND POST COLONIAL STUDIES-II	80	16	20	04
V	LINGUISTICS-II	80	16	20	04
	Total	400		100	

At the end of the MA course in English Literature the student can:

- **Read** and interpret Classical and Modern Literature from all the different Genres. Can apply the critical approach while interpreting a text. Understand the main idea behind any piece of the Literature.

- **Acquire** the knowledge of the vast English Literature and appreciate the literature aesthetically. Know the use of literary devices and terms in their writings.

- **Knowledge** of the basics of the literature also of the History of the English Literature from Chaucer to the Post-Modern times. The learner will also know the basic Colonial and Postcolonial Literatures.

- **Reproduce** the piece of literature that they have read and can bring proper justice to the work using their learning. Can also create and write a piece of literature their own.

- **The history behind the piece of literary work** and the importance of the work in contemporary society and the use of the work in the present context.

- **Basic Moral values** literature also helps the learner to know about their basic moral values and to imply them in their day-to-day life.

- **Culture and Tradition** can be easily understood through these literary pieces of works also the cultural variations of different countries can be easily understood by the literature of the time.

- **Writing skills and Process**; Students will be able to recognize and comprehend different varieties of English language and develop a writing style of their own. English literature students should be aware also that textual analysis can be extended with profit to political and commercial writings. It is expectedthattheir exposure to the ideas of variety of writers and their cultural backgrounds, will have a bearing in their own literary styles.

- **Means of Effective Communication;** Study of literature is intertwined withthe study of language. Learning various language patterns, sentence structures and dialogue forms can help one in real life in effectively communicating withothers. English is the language of science, computers, diplomacy, and tourism. Knowing English increases students' chances of getting a good job in future.

- **Future Scope** – Students can secure their future in the fields of transcription, teaching and education, language curators etc.

PROGRAMME SPECIFIC OUTCOME:

The course of Semester First English Literature has been divided into five papers.

PSO 01: Semester-I – Poetry I

The paper covers the major works from the era of Geoffrey Chaucer to the Restoration Era. The paper aims at imparting knowledge regarding:

- The era and major works.
- Old English and flourish of the old English literature Renaissance and the literature of the time Tudor literature, Caroline and Jacobean poetry.
- The rise and fall of the Puritan era and Epic poetry
- The Commonwealth Literature
- The Restoration era and mock-epic poetry.

PSO 02: Semester-I – Drama I

The paper will enable the learner to grasp knowledge about:

- The Era of Theatre.
- The Shakespearean era and its impact on contemporary English Literature.
- The Puritan era and closing and re-opening of theatres.
- Theatre of morality.

PSO 03: Semester-I – Prose I

The paper covers a period of the Restoration Era and will help students to learn about:

- The impact of prose writing on theatre and epic.
- The quarterly papers and journals
- The coffee houses
- The spurt of science and its impact on the literature of the time.
- Famous literary essays and essayists

PSO 04: Semester-I – Fiction I

The paper has been designed to impart knowledge regarding:

- The famous fiction and fiction writers. Themes and scope in fictions
- Changing trends in writing
- Complex themes and subjects
- The era of anti-hero and re-telling of old dramas.

PSO 05: Semester-I – History of English Literature

This paper acknowledges learners with detail information about English eras and periods:

- Prominent writers and their contemporary minor authors
- Important literary works
- Major socio-political upheaval
- Monarch and contemporary society
- Major literary and social movements

PROGRAMME SPECIFIC OUTCOME:

The course of Semester Second English Literature has been divided into five papers: -

PSO 01: Semester-II – Poetry II

The paper covers the major works from the Pre-Romantic era to Victorian Era. The paper aims at imparting knowledge regarding:

- The era and major works.
- Pre-Romantic works
- Major changes in the literature of the time
- The spurt of logic and reasoning in the literature
- Change in the genre and introduction of new themes in the poetry

PSO 02: Semester-II – Drama II

The paper covers the period from the Restoration Era to the Edwardian Era and will enable the learner to grasp knowledge about:

- The Era of Restoration Comedy
- The era of Closet Drama and Curtain Raisers
- Translations and their impact on the English literature
- Colonial world and their meagre pictures

PSO 03: Semester-II – Prose II

The paper covers a period from the Romantic Era to World War I and will help students to learn about:

- The changing face of the prose writing
- Famous works and author
- Adoption of more formal language
- Essays dealing the common life
- Satire, irony, humour and pathos as the major themes
- Logic became the core of all writings

PSO 04: Semester-II – Fiction II

The paper has been designed to impart knowledge regarding:

- The famous fiction and fiction writers
- Themes and scope in fictions
- Changing trends in writing
- Complex themes and subjects
- The era of anti-hero and re-telling of old dramas. Novels became an instrument for liberating female voices

PSO 05: Semester-II – Modernist Poetry

The paper precisely covers writers from different genres of poetry and introduces learners to:

- Prominent writers and their seminal works
- Authors from different eras and continents
- Varying writing style
- Major literary and social movements

PSO 01: Semester-III – Critical Theory I

This paper introduces learners to the critical theories from Classics to the English Victorian Era; also it will enable them to:

- Understand and interpret the classical theories
- The Greco-Roman Era and the major critical exponents
- Influence of the Classics on English Critics
- The shaping of the English Criticism
- The Romantic phase of the criticism
- Major English critics

PSO 02: Semester-III – Indian Writings in English I

The paper focuses on the Indian Writings in English covering the Indian Colonial era and Postcolonial era which will acknowledge learners about:

- The early Indian writings and the prominent writers
- The translation phase of the Indian English literature
- Knowledge about Anglo-Indian and Indo-Anglian Literature
- Major literary works
- Changing phase of the Indian Writings in English

PSO 03: Semester-III – American Literature I

Learners will have knowledge about the Renaissance American Literature, New England Renaissance and also:

- The major American writers
- Prominent American literary works
- Democratic phase of the American literature
- Impression of two World Wars
- Feminism and the impact of the feminist movement on the literature
- Major literary movements

PSO 04: Semester-III – Colonial and Post-Colonial Studies I

The paper focuses on the Colonial and Post-Colonial Studies and the theories of the eras.

The students will learn about:

- The impact of Colonialism on the Indian society and Literature
- Impact of English Language and Literature on the Indian minds
- The image of India and Indians in the Anglo-Indian texts and image of Westerns in Indo-Anglian texts
- Learning of the new culture and mingling of the cultures
- East-West encounters
- The Post-Colonial literature and the spurt of oriental expression

- Gaining an orient identity
- Changing phases of the Indian society in literature since independence

PSO 05: Semester-III – Linguistics I

Students should have knowledge and use of English language after completion of their post-graduation and they must know the correct usage of the language for the same the paper enables:

- Structure and Morphology of English Language and its characteristics
- Scope levels and branches of Linguistics
- Socio and Psycho Linguistics
- Structure of English words
- IC Analysis & its models, Phrase Structure Grammar (Syntax NP-VP)

PSO 01: Semester-IV – Critical Theory II

Criticism in English has changed a lot since early of the Modern Era to the Postmodern Era students will be informed and be acknowledged of:

- The spurt of the Modern thinking
- New theories
- Re-visiting old texts
- Traits of the Modern Era
- New historians and fourth world criticism

PSO 02: Semester-IV – Indian Writings in English II

Students will know about the Modern Indian English Literature and how it came into present form:

- The three biggies of the Indian English Literature
- Modern Indian English Poets
- Use of colloquial words in English Literature
- Modern Indian English Drama and theatre
- Modernism in the Indian society and its impact on the contemporary literature
- Spurt of modern science and modern oriental Indian theories.

PSO 03: Semester-IV – American Literature II

Students will know and can interpret the Modern American Literature also they will:

- Learn about the about modern themes used in the literature
- Impact of Ancient Indian scriptures on the modern American writers
- Era of translation and its influence

- American renaissance and major literary movements

PSO 04: Semester-IV – Colonial and Post-Colonial Literature II

The paper acknowledges students about the colonial era and related texts. Students will further know:

- Orientalism and Colonialism
- Occident text and rewriting oriental text
- Finding origins and clearing the orient images
- World literature and their common link with each other

PSO 05: Semester-IV – Linguistics II

Students will learn about:

- Basic English Phonetics
- Organs of speech
- Vowel and Consonant sounds and symbols
- Transcription
- Correctness of the language and usage

BA ENGLISH LITERATURE (PART – I, II & III)

OBJECTIVES OF THE PROGRAMME:

The college follows Hem Chand Yadav Vishwavidyalaya, Durg syllabus for Bachelor of Arts in English Literature. The objectives of the prescribed syllabus are:

- To develop an aesthetic sense and love for literature in learners.
- To help them appreciate ancient classic texts.
- To encourage them towards research and further learning. To provide learners with critical faculty.

PROGRAMME OUTCOME:

The BA English Literature programme ensures:

- Critical learning of the texts.
- Analysis of the text for proper understanding and interpretation.
- Representation of the text in literary usage.

- Appreciate old texts
- Can differentiate between texts of different genre and continents. Will able to use the text artistry in their language.

COURSE OUTCOME:

There are two papers in the English literature of each academic year. Each paper carrying maximum marks of 75. Each question carries the marks according to the scheme mentioned in each paper. Minimum passing marks will be 50.
At the end of the BA course in English Literature the student can:

- **Read** and interpret the Basic English literary texts. The students will have basic knowledge of the Ancient Greek Literature, Roman Literature and the Renaissance English.

- **Acquisition -** Student will acquire knowledge of the use and interpretation of the literary texts and to introduce and felicitate students to understand the history of post-war reflection of life in literature. To focus on the demeanour behind the paradigm shift from orthodoxy to radical life during the modern age.

- **Engage** them in the life-long learning process.

- **Research** – Students will be capable to explore and research in the field of literature more with progress of the course.

- **Assist** students in the field of literacy, intellectuality, flexibility and adaptability to different cultures.

- **Understanding** – Students will develop an understanding towards the less familiar texts and will read them more for the proper usage.

- **Description** – Students will describe, analyse and interpret literary texts critically exploring ideas and themes by themselves.

- **Aesthetic sense -** Students will develop an aesthetic sense and a sense of love towards the literature and learning and interpreting the concept of individualism and equality at all inclusive levels.

- **Expressive -** The learning of the literature will make them more expressiveand sharpen their artistic outlook further, retracting the ideas of the 'modern' mindset and the cultural transition.

- **Language** – Students will learn and use the literary language in their writingsand will also able to create poetry and prose of their own.

- **Acquaint** with various schools of thought in the modern age leading to Post-modern age and new trends in English theatre.

- **Analyse** the effects of socio-cultural changes in the poetry of the century.

- **Future Scope** – Students can secure their future in the fields of transcription, teaching and education, language curators etc.

PROGRAMME SPECIFIC OUTCOME:

The course of BA in English Literature has been divided into two papers in an academic year:

PSO: BA Part I – Paper I – Literature in English- (1550-1750)

The paper covers the course of English literature from 1550-1750. Students will acquire knowledge regarding:

- Broad idea of the era and the features
- Language of the era and the basic literary works
- The basic poetry and the critical analysis of the same
- Introduction to the Shakespearean literature and theatre culture
- Era of the drama and theatres
- Use of literary terms and devices
- Prominent works and authors
- Literary movements and their impact on society and the literature of the contemporary time

- English monarch and the important event in their eras
- Various changes brought in the course of construction of the literature
- Brief History of the English Literature

PSO: BA Part I – Paper II – Literature in English from (1750-1900)

The paper covers the course of English literature from 1750-1900. Students will acquire knowledge regarding:

- Brief knowledge of the Romantic Era, Victorian Era and Edwardian Era Change in the main theme and adoption of sublime language in literature.
- Lake poets and the development of the European literature
- Famous essays and the flourishing culture of coffee houses
- Increase in the literacy level and end of the tragedies
- Spurt of closet dramas and curtain raisers
- Novel as the new genre of the literature
- Expanse of the expression and use of complex themes
- Literary movements and their impact on society and the literature of the contemporary time
- English monarchs and their influence on the literature of their time
- Brief History of the English literature

PSO: BA Part II – Paper I – Modern English Literatures I

The paper prepares students in the field of modern English literature with brief knowledge of American literature;

- Important American and English writers and texts
- Impact of the British colonialism and imperialism on the American literature
- Change of themes from English to American
- Glimpse of other British colonies
- Mingling of cultures
- Deeper knowledge of the genres and their usage
- Important literary movements and the influences
- The democracy and voice of commoners in literature
- Origin and development of novella and Short-Stories

PSO: BA Part II – Paper II – Modern English Literatures II

The paper focuses more on the American writers and American literature of American Renaissance time to the time of two World Wars. The student will learn about:

- Important social and political movements and their influence on the literature of the time
- Major American writers and texts
- Use of complex themes and introduction of various sub-genres in the literature
- Re-reading the old texts
- Psycho-analytical approach in literature
- Development of the short stories
- Impact of feminist movement on literature

PSO: BA Part III – Paper I – Indian Writing in English

The paper presents the finest Indian writings in English and the best of the translated works.

The paper will enable students to:

- Collect information about the prominent Indian authors
- The important literary works
- Best literature from the other languages in translation
- The Indian theatre and mythology
- The use of folklore and legends; both local and national in the Indian literature
- Best playwright and their seminal works
- The different genre of the Indian English Literature
- Modern Indian English Literature

PSO: BA Part III – Paper II (A) – American Literature

Learners will have knowledge about the Brief introduction of American Literature, New England Renaissance and also:

- The major American writers
- Prominent American literary works
- Democratic phase of the American literature
- Impression of two World Wars
- Major literary movements
- Major themes and the modern literary terms and devices.

PSO: BA Part III – Paper II (B) – 20th Century Literature in English

The Principle focus will be to probe the students a general background and cultural history of this period and also to make them aware of the literary trends of the twentieth century.

- The students are exposed to the newer nuances of American and impression of British life and their change by analysing 20th century literature.
- Impact of two the two World Wars
- Induction of Absurd Theatre and themes
- Impression of the Russian revolution on the contemporary literature
- Great depression Era and its influence of the life and literature of the time Study of human psychology and emergence of Freudian thoughts in theliterature

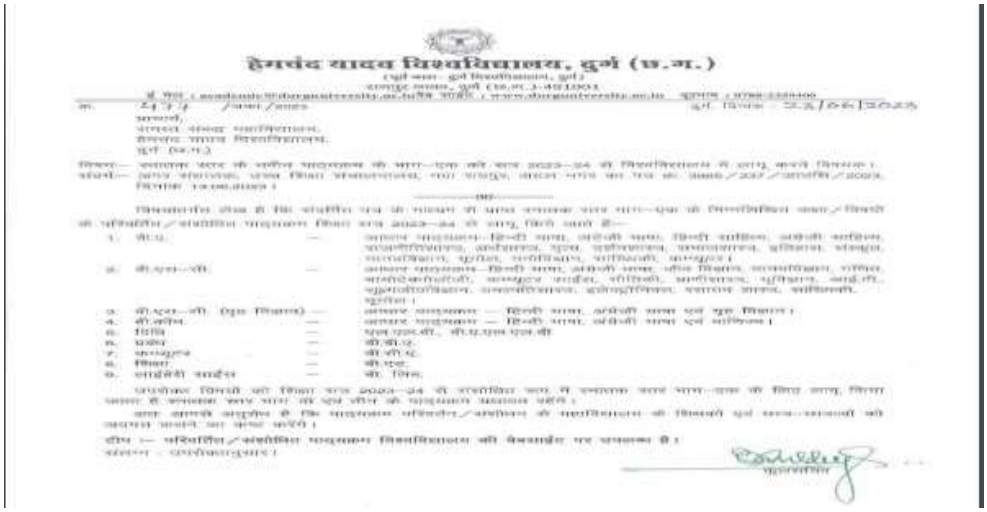
BA, BSc & BCom (PART – I, II & III)
FOUNDATION COURSE

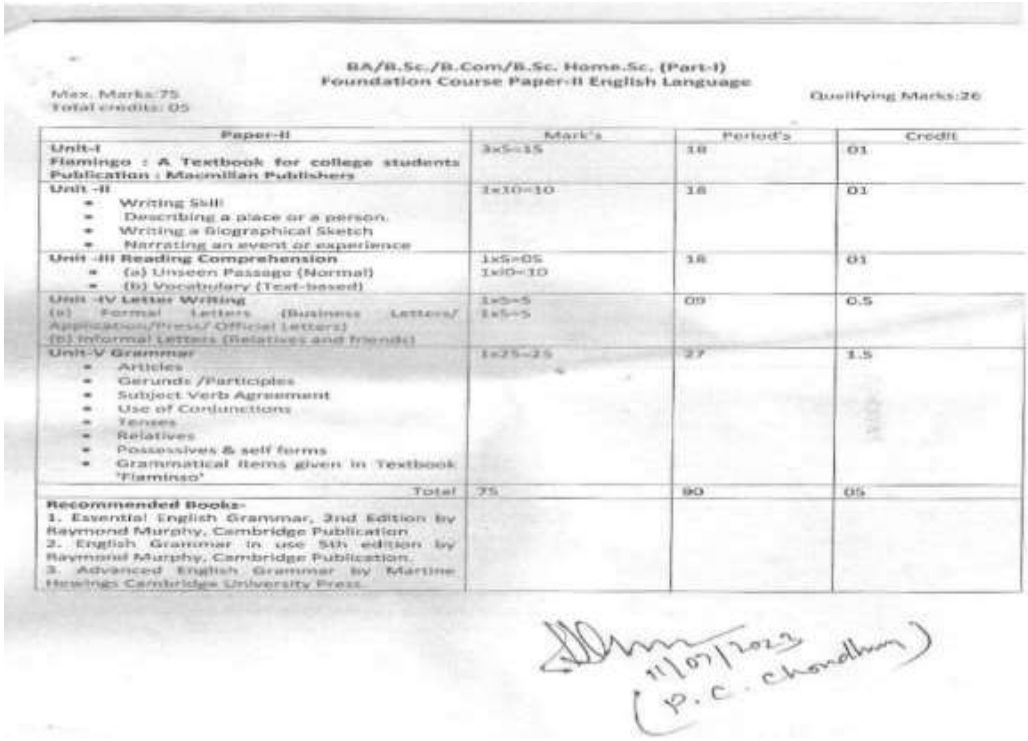
(ENGLISH LANGUAGE)

PAPER - II
BCA (PART – II & III)

FOUNDATION COURSE

(ENGLISH LANGUAGE)


हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)



BA/B.Sc./B.Com/B.Sc. Home.Sc. (Part-I)
Foundation Course Paper-II English Language

Max. Marks:75
Total credits: 05

Qualifying Marks:26

Paper-II	Mark's	Period's	Credit
Unit-I **Flamingo : A Textbook for college students** **Publication : Macmillan Publishers**	3x5=15	18	01
Unit -II • Writing Skill • Describing a place or a person. • Writing a Biographical Sketch • Narrating an event or experience	1x10=10	18	01
Unit -III Reading Comprehension • (a) Unseen Passage (Normal) • (b) Vocabulary (Text-based)	1x5=05 1x0=10	18	01
Unit -IV Letter Writing (a) Formal Letters (Business Letters/ Application/Press/ Official Letters) (b) Informal Letters (Relatives and friends)	1x5=5 1x5=5	09	0.5
Unit-V Grammar • Articles • Gerunds /Participles • Subject Verb Agreement • Use of Conjunctions • Tenses • Relatives • Possessives & self forms • Grammatical Items given in Textbook 'Flamingo'	1x25=25	27	1.5
Total	75	90	05
Recommended Books- 1. Essential English Grammar, 2nd Edition by Raymond Murphy, Cambridge Publication 2. English Grammar in use 5th edition by Raymond Murphy, Cambridge Publication. 3. Advanced English Grammar by Martine Hewings Cambridge University Press.			

11/07/2023
(P. C. Chaudhary)

OBJECTIVES OF THE PROGRAMME:

The college follows Hemchand Yadav Vishwavidyalaya, Durg syllabus for the English Language as the second paper of Foundation Course; Hindi language being the first paper. The objectives of the prescribed syllabus are:

- To develop an aesthetic sense and love for literature, culture, tradition and language in learners.
- To help them appreciate ancient classic texts.
- To encourage them towards further learning.
- To provide learners with a basic understanding of the language.

PROGRAMME OUTCOME:

English being the second language in the state and the other in the official use and understanding nationwide the course of English Language programme hence ensures:

- The proper reading and writing of the prominent English texts
- Understanding of the texts
- Development of the curiosity and aesthetic sense towards the language
- Learning of the basic grammar and phonetics

- Learning of the syntax and morphology of the language
- Use of the correct language
- Ensures the learner read the other texts in the language

COURSE OUTCOME:

The subject Foundation Course has been divided into two separate papers; Paper-II – English Language. The paper is of maximum marks 75 and minimum pass mark is 26. The candidate has to pass each paper separately.

The English Language of BCA Part- II & III are of maximum marks of 50 each and the minimum pass mark is 20 each.

At the end of the course in the English Language the student can:

- **Read** and write the in the language
- **Acquisition -** Student will acquire knowledge of the use and interpretationofthe texts.
- **Engage** them in the life-long learning process.
- **Write** – Student can write and describe his thoughts in the language
- **Assist** students in the field of literacy, intellectuality, flexibility and adaptability to different cultures.
- **Understanding** – Students will develop an understanding of the less familiar texts and will read them more for the proper usage.
- **Description** – Students will able to describe the incidences and events in the language
- **Aesthetic sense -** Students will develop an aesthetic sense and a sense of love towards the literature and learning.
- **Expressive -** The learning of the literature will make them more expressiveand sharpen their artistic outlook.
- **Language** – Students will learn and use the literary language in their writingsand will also able to create poetry and prose of their own.

- **Future Scope** – Students can secure their future in the fields of translation, transcription, teaching and education, language curators etc.

PROGRAMME SPECIFIC OUTCOME:

The course of BA in the English Language has been divided into one paper in an academic year:

PSO: BA/BSc/B Com Part-I – Flamingo: A Textbook for College Students, Published by Macmillan Publishers

The paper highlights ancient and old cultural traditions in Ancient India. The paper enables students to:

- To read and understand about Ancient and Old Indian culture and traditions
- Ancient Indian texts, myths and the impact of Ancient Indian culture on other cultures
- The age of Ramayana and Mahabharata and the impact of these epics in the development of the culture and traditions of the South-Asian countries
- Impact of Buddha and Buddhism in India and the neighbouring countries. Also, the development of Buddhism as a religion worldwide
- Ancient Indian Science and knowledge; India being the centre of literature and cultural exchange
- The old India and her boundaries, the rich heritage, the flourishing culture, Ancient Indian civilization, Harappa, Mohenjo-Daro and Indus-River Valley.
- The Ancient Indian Literature and the impact of the literature worldwide.

PSO: BA/BSc/B Com/BCA Part-II – Foundation English

The paper focuses on the Ancient Indian Science and the cultural ethics of India. The paper acquaints students with:

- The fine knowledge of Ancient India
- Ancient Indian Scientists, Mathematics and Mathematicians, medicines, medical practices and the ancient texts based on the same
- The colonial Indian culture and the impact of the colonization on the Indian subcontinent
- The introduction of Western Science and Western Culture
- Modern Indian scientists and the contribution of the Indians in the development of the Modern Science

- The basic knowledge of the language with the fine grammar, phonetics and the vocabulary
- Students will collect much information on the Science in Ancient India with the knowledge of the English language

PSO: BA/BSc/B Com– Aspects of English Language and Development

The paper is a collection of essays on the general information and awareness; also it helps students to advance in the language. Students also get glimpse of the English Literature with the collections of short-stories in the prescribed book. The textbook also helps students in:

- Collecting the information on the development and the advancement of the modern technique
- The geography of the state, soil, crops and water
- General information on the types of pollution and the increasing water crisis
- The ethics and conducts of the day-to-day life
- English language and the basic genres of the literature
- Famous essayists and short-story writers
- Famous Indo-Anglian and Anglo-Indian writers
- Texts describing the achievements of the modern Indians
- The development of modern science and technique in India
- Sci-fi and other such forms of the literature
- Also, the learners will develop a positive attitude towards the future and lovefor learning
- Advance grammar, sentence formation and vocabulary.

BCA PART – I (COMMUNICATION SKILLS) & BBA 1ST SEMESTER (ENGLISH)

OBJECTIVES OF THE PROGRAMME:

The college follows Hem Chand Yadav Vishwavidyalaya, Durg syllabus for the English Communication Skills. The objectives of the prescribed syllabus are:

- The basic knowledge about English grammar, vocabulary, sentence formation with advance practical grammar
- To develop LSRW skills in learners.
- To encourage them towards further learning.

- To provide learners with a basic understanding of the English language.

PROGRAMME OUTCOME:

English being the second language in the state and the other in the official use and understanding nationwide the course of English Language programme hence ensures:

- Development of the curiosity and aesthetic sense towards the language
- Learning of the basic grammar
- Learning of the syntax and morphology of the language
- Use of the correct language
- Letter, essay and paragraph writing
- Ensures the learner read the other texts in the language

COURSE OUTCOME:

The paper Communication Skills for BCA Part-I is of maximum marks 80 and minimum pass marks of 27. The candidate has to get the minimum marks to pass the paper separately. The English paper in BBA Semester-I have been designed to enable the students of management to speak and write with a fair degree of grammatical correctness. The paper is of maximum 100 marks with an internal of 10 marks and external 90 for the semester exam.
The candidate has to pass both in internal and external examination. At the end of the course in the English Language the student can:

- **Read** and write the in the language
- **Acquisition -** Student will acquire knowledge and use of the language. Also,will sharpen their speaking skills.
- **Engage** them in the life-long learning process.
- **Write** – Student can write and describe his thoughts in the language
- **Understanding** – Students will develop an understanding of the less familiar texts and will read them more for the proper usage.

- **Description** – Students will able to describe the incidences and events in the language

- **Aesthetic sense** - Students will develop an aesthetic sense and a sense of love towards the literature and learning.

- **Expressive** - The learning of the literature will make them more expressive and sharpen their communicative and artistic outlook.

- **Language** – Students will learn and use the language in their writings and will also able to create poetry and prose of their own.

- **Future Scope** – Students can secure their future in the fields of translation, transcription, teaching and education, language curators etc.

PROGRAMME SPECIFIC OUTCOME:

The course of BBA 1ST Semester (English) & BCA Part-I (Communication Skills) comprises of one paper in an academic year. The student will have knowledge regarding:

- The basic grammar usage
- The communication skills and the learning of the same
- Drafting of letters; formal, informal and editorial
- Paragraph writing and creating an essay
- Creative writing and creation of the conversation précis writing, presentation skills
- Advanced grammar and the basic knowledge of clauses, phrases and Modals
- Use of English idioms and finding errors in the sentences
- The correctness of the language
- English language learning and the basic errors in the pronunciation
- Write and create notice, circular minutes & agenda of meeting, memorandum, e-mail writing strategies, advantages, characteristics and formatting.
- Using video conferencing and fax as a source of learning.

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Assistant Professor & Head
Department of English
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Department of Computer Science

Objective of the programme:

The objectives of the computer sciences department is to prepare students for graduate training in some specialized area of computer science, to prepare students for jobs in industry, business or government, and to provide support courses for students of commerce, management and science to acquire the computing skills.

The College follows Hemchand Yadav University, Durg Syllabus of Bachelors in Computer Application (BCA), B.Sc.(Computer Science), B.Com.(with Computer Application), BBA (Computer Fundamentals and MIS).

The objectives of prescribed course are:

- Demonstrate proficiency in problem-solving techniques using the computer
- Demonstrate proficiency in at least two high-level programming languages and two operating
- systems
- Demonstrate proficiency in the analysis of complex problems and the synthesis of solutions to
- those problems
- Demonstrate comprehension of modern software engineering principles
- Demonstrate a breadth and depth of knowledge in the discipline of computer science

Programme Learning Outcomes for Bachelor of Computer Application (BCA)

On completion of this programme, the students are expected to:

PLO1: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the

abstraction and conceptualization of computing models from defined problems and requirements.

PLO2: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PLO3: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

PLO4: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PLOS: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PLO6: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

PLO7: Develop software projects in various languages as per the demand of the market.

PLO8: Work on research based projects.

PLO9: Develop live software projects and will be capable of working in IT companies.

PLO IO: Explore and gain new knowledge through MOOC courses.

PLO ll: Ability to pursue higher studies of specialization and to take up technical employment. PL012: Ability to formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate.

PL013: Apply standard Software Engineering practices and strategies in real-time software project development.

PLO14: The ability to work independently on a substantial software project and as an effective team member.

PL015: Ability to operate, manage, deploy and configure software operation of an organization.

Year	Course Code	Subject Name	Theory/ Practical	Total Credit	Marks			
					UE	IA	Total	
					Max	Max	Max	Min
First	BCA-lT	Discrete Mathematics	Theory	6	75	25	100	
	BCA-2T	Computer Fundamental and MS office	Theory	4	75	25	100	
	BCA-3T	Programming with C and C++	Theory	4	75	25	100	33
	BCA-4T	Data Structure	Theory	6	75	25	100	33
	BCA-5T	Digital Electronics	Theory	6	75	25	JOO	33
	BCA-6T	Hindi	Theory	5	50	-	50	17
	BCA-7T	English	Theory	5	50	-	50	17
	BCA-lP	LAB I: PC software	Practical	2	l 00	-	100	33
	BCA-2P	LAB 2: Programming with C and C++	Practical	2	100	-	100	33
Second	BCA-8T	Numerical Mathematics	Theory	6	75	25	100	
	BCA-9T	Operating System	Theory	6	75	25	100	33
	BCA-l0T	Relational Database Management System	Theory	4	75	25	100	
	BCA-1IT	Computer Networking and Cyber Technology	Theory	6	75	25	100	33
	BCA-12T	Web Technology	Theory	4	75	25	100	
	BCA-l3T	Hindi	Theory	5	50	-	SO	17

	BCA-14T	English	Theory	5	50	-	50	17
	BCA-3P	LAB 3: Relational Database Management System	Practical	2	100	-	100	17
	BCA-4P	LAB 4: Web Technology	Practical	2	100	-	100	17
Third	BCA-15T	Python Programming	Theory	4	75	25	100	
	BCA-16T	Java Programming	Theory	4	75	25	100	
	8CA-17T	Software Engineering	Theory	6	75	25	100	
	BCA-l8T	Artificial Intelligence and Expe1t System	Theory	6	75	25	100	33
	BCA-l9T	E-Commerce	Theory	6	75	25	100	33
	BCA-20T	Communication Skill	Theory	5	100	-	100	

Course Outcome

- Produce knowledgeable and skilled human resources which is employable in IT field.
- An ability to enhance not only comprehensive understanding of the theory but its application too in diverse field.
- Impart knowledge required for planning, designing and building Complex Application Software Systems as well as provide support to automated systems or application.
- Programmer: The program prepares the young professional for a range of computer applications, computer organization, computer networking, and software engineering, Web Designing, JAVA, Linux, Oracle and Android Programming.
- Project Development: Introduced the concept of project development in different language/technology learnt during semester, in order to enhance programming skills of the students.

- Produce entrepreneurs who can develop customized solutions for small and medium
- Enterprises.

Programme Specific Outcome
BCA -1T Discrete Mathematics

- Learn about partially ordered sets, lattices and their types.
- Understand Boolean algebra and Boolean functions, logic gates,
- switching circuits and their applications.
- Solve real-life problems using finite-state and Turing machines.
- Assimilate various graph theoretic concepts and familiarize with their applications.

BCA-2T Computer Fundamental and MS Office

- Describe the history and types of computers and vanous input/output devices.
- Understand the concept of memory and its types.
- Understand the MS Word with page setup, formatting text, print documents and mail merge
- Understand the MS Excel with creating sheets, calculation in cell and prepare charts.
- Understand the sorting & filter in MS Excel.
- Understand the MS Power point with design templates, slide
- transaction and animation effects.

BCA-3T

Programming with C and C++

- Develop programming skill and learn how to implement a new
- software.
- Develop programming and logical concepts which helps to build up
- source code of concern programming language.
- Understand the concept of programming like Compilation. Debugging, Executing, Linking and Loading.
- Familiar about the structure of C and C++ program.

- Understand about the cursor movement and control structure of C and C++ program.
- Write simple C and C++ programs using programming concepts.
- Familiar about procedure oriented and object oriented concepts.
- Understand the concept of inheritance and polymorphism which helps them to develop programs to solve real world problems.
- Use file handling concepts in C and C++ to develop programs for real life projects.
- Develop new applications with C and C++ which helps them to
- switch in Software Industry.

BCA-4T

Data Structure

- Use different types of data structures, operations and algorithms. II
- Implement appropriate sorting/searching technique for any given problem.
- Use stack, Queue, Lists, Trees and Graphs in problem solving.
- Find suitable data structure during application development/ Problem Solving.

BCA-ST

Digital Electronics

- Examine the structure of number systems and perform the conversion among different number systems
- Illustrate reduction of logical expressions using Boolean algebra, k- 1
- map and tabulation method and implement the functions using logic gates
- Realize combinational circuits for given application
- Analysis synchronous and asynchronous sequential circuits using , flip-flops.
- Define combinational logic circuits usmg programmable logic devices.

BCA-lP

LAB l: PC Software

- Learn Modern office activities and their software requirements.
- Create a new Word document and formatting a document using MS- WORD.
- Create an electronic spreadsheet using MS-Excel, familiarize oneself with Excel's basic and advance features.

- Create a slide show presentation and explore the Microsoft Office PowerPoint environrnent.

BCA-2P

LAB 2: Programming with C and C++

- Understand the fundamental programming concepts and methodologies which are essential to create good CIC++ programs.
- Code, test, and implement a well-structured, robust computer program using the CIC++ programming language.
- Write reusable modules (collections of functions).
- Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter
- passing.
- Develop an in-depth understanding of functional. logic. and object-oriented programming paradigms.

BCA II Year

BCA PART- II

Subject Code	Subject Paper	Theory Marks		Internal Marks		Teaching Load per Week		
						L	T	P
		Max. (A)	Min. (B)	Max (C)	Min. (D)			
BCA201	Calculus and Differential Equations	80	27	20	8	4	2	-
BCA202	Database Management System	80	27	20	8	4	2	-
BCA203	Programming in 'C++	80	27	20	8	4	2	-
BCA204	Computer Networks	80	27	20	8	4	2	-
BCA205	Operating Systems with Linux	80	27	20	8	4	2	-
BCA206	Foundation Course	80	27	20	8	4	2	-
BCA207	LAB IV. Programming Lab in 'C++'	100	50	40	16	-	-	3x2
BCA208	LAB V: Database Management System Lab	100	50	40	16	-	-	2x2
BCA209	LAB VI Operating System Lab	100	50	20	8	-	-	1x2
TOTAL		780	312	220	88			
GRAND TOTAL	(PAPER + INTERNAL)	(A+C) 1000		(B+D) 400				

Program Specific Outcome

Database Management System (Paper Code BCA-202)

Students will be able to:

- To design and build a simple database system.
- Demonstrate competences with fundamental task involved with modelling, designing, and implementing a DBMS.
- Design E-R diagrams for given problems.
- To understand and use data manipulation language to query, update and manage a database.

PRACTICAL WORK

BCA-208 DBMS LAB

Scheme of Examination: -

Practical examination will be of 3 hours duration. The distribution of practical marks will be

as follows:

Programme 1 (Oracle)	**20**
Programme 2 (Oracle)	**20**
Programme 3 (Oracle)	**20**
Viva (Oracle + project)	**25**
[Practical Copy+Practical Sessional]	**15**
Total - 100	

Programming in 'C++' BCA 203

Understand object oriented programming, difference between object oriented programming

and procedural programming.

- **Able to build program using C++ features such as Class, objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.**
- **Able to build C++classes using appropriate encapsulation and design principles.**
- **Improve problem solving skills by applying object oriented or non-object oriented techniques**

PRACTICAL WORK BCA II BCA-208

Programming in C++

Scheme of Examination: -

Practical examination will be of 3 hours' duration. The distribution of practical marks will be as

follows

Programme 1 - 20

Programme 2 - 20

Visual C++ - 10

Viva - 25

B.SC. (Computer Science)

Year-First, Second, Third

Program Outcome

A student after completing his/her B.Sc. (Computer Science) degree will equipped with:

- An awareness of how computer science impacts our society and environment and the benefits it offers the technical society
- Gain proficiency in the handling of various hardware instruments, software's etc.
- Develop basic scientific concepts of programming which will help in rationale thinking and better understanding of various IT problems.
- Exhibit excellent problem solving ability by critical thinking and integrating various ideas learned during laboratory experiments or class lectures.
- Participate in scientific debates or arguments with confidence and will be able to convince the audience by logical presentation.
- Undertake project work for IT Sector, industry or NGOs regarding software engineering, Software testing, data analysis etc.
- Develop research aptitude in the various fields of computer for example fuzzy logic, cloud computing, internet technology.

B.Com. (with Computer Application) as an Additional Subject

Year-First, Second, Third

Program Outcome

A student after completing his/her (B.Com. with Computer Application) degree will be able to:

- Understand the concepts of basic Computing and organization of computerized document. • Enrich programming, teamwork, Professional and leadership skill sets of students.

- Integrate knowledge, skill and aptitude of ICT that will help the student's creativity with an assurance for good careers with a basic B.Com. Degree.

- Lend manpower needs of companies in Computerized Accounting, Taxation, Auditing, Financial Analysis and digital management.

- Create Computerized Analysis the economic, social and environmental issues related to business.

- Work in technical teams with enhanced inter-personal skills.

B.B.A. First and Third Semester

(Course Title: Computer Application & Management Information System)

Course Outcome-

- Students will acquire knowledge in basic management skill and business applications

- The students can seek employment in various public and private sectors

- The course make industry ready human resource and will also impart computerized entrepreneurship skills

- Developed sound academic base for advanced career in Computer Application.

- Acquired hands –on us of computers in business application.

- The program helps students to explore the area of specialization in Computer Application

M.Sc. (Computer Science) Semester- First, Second, Third, fourth

Course Outcome

After the completion of the course students will be able to:

- Master programme which aims to impart a sound understanding of the advanced principles of Computer Science.

- Provide sufficient depth and breadth of experience in up-to-date methodologies.
- Provide an exhaustive treatment of selected research-based topics, to significantly advance a student's career prospects within the IT industry, and/or equip the student to undertake research in Computer Science.
- Provide theory, elective, practical, research paper, Industrial Plant Training and software project courses as a core courses.
- Provide a technology trend platform for the students to learn and equip the latest updates in the information technology field from the computer science magazines as a self-study paper.
- Advanced learners can pursue short term online certificate courses from SWAYAM, NPTEL based on their interest and latest market demands.

PGDCA (Post Graduate Diploma in Computer Application) Semester- First, Second

Course Outcome

- Software knowledge - apply knowledge of basic concept for developing software with different from traditional software development concept.
- Problem analysis – By using concept of entity relationship diagram and basic concept, feasibility study will be operational and technical feasible.
- Design and development of system - by using concept of entity relationship diagram and basic concept of computer and developing software.
- Modern toolset uses - create, select and apply appropriate techniques resources like 4G, OOP.
- Testing - After analysis and design of new system can perform testing of error for error free software.

- Social responsibility - study will conducted which will concern with operation of system and effect of system on society which called as social feasibility.
- Ethics - In this integrated one year course ethical principal and commits to professional ethics and responsibility and norm of software engineering practice

Department of Management

These are the, Course Outcomes (COs), Program Outcomes (POs), and Program Specific Outcomes (PSOs) of BBA

Course Outcomes (COs)

Course Outcomes (COs) refer to specific learning outcomes expected from individual courses or subjects within the BBA program.

- **CO1: Business Fundamentals**
  Students will gain knowledge of the basic concepts and theories of management, accounting, marketing, finance, and operations.
- **CO2: Analytical and Critical Thinking**
  Develop analytical skills to critically evaluate business situations and make informed decisions using appropriate business tools.
- **CO3: Communication and Presentation Skills**
  Ability to communicate business ideas effectively in both oral and written forms, using presentations, reports, and formal correspondence.
- **CO4: Ethics and Corporate Social Responsibility**
  Understand ethical business practices and the importance of corporate social responsibility in the context of global and local business environments.
- **CO5: Financial Literacy**
  Gain competency in interpreting financial statements and applying principles of financial management to real-world business scenarios.
- **CO6: Marketing Strategies**
  Develop and apply marketing strategies that cater to the needs of target markets through product innovation, pricing, distribution, and promotion.
- **CO7: Organizational Behavior**
  Understand how to manage individuals and teams in organizational settings by applying the principles of organizational behavior and leadership.

Program Outcomes (POs)

Program Outcomes (POs) are broad learning objectives that students achieve upon completing the entire BBA program. They are aligned with the expectations of business management education.

- **PO1: Management Knowledge**
  Apply theoretical and practical knowledge of management principles across various functional areas like marketing, finance, HR, and operations.
- **PO2: Problem-Solving Skills**
  Identify, analyze, and solve complex business problems using critical thinking and decision-making techniques.

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H O D Management
Shri Shankaracharya Mahavidyalaya
Junwani Bhilai

- **PO3: Global Perspective**
  Understand the dynamics of the global business environment and how it influences management practices and business strategies.
- **PO4: Entrepreneurial Skills**
  Develop an entrepreneurial mindset, demonstrating the ability to create business opportunities and take calculated risks.
- **PO5: Ethical Leadership and Social Responsibility**
  Lead ethically in business situations, ensuring decisions are made with integrity, fairness, and concern for societal welfare.
- **PO6: Teamwork and Collaboration**
  Work effectively in diverse teams, demonstrating interpersonal skills and the ability to manage conflicts, collaborate, and lead.
- **PO7: Technological Adaptability**
  Utilize modern business tools and technology in data analysis, project management, and decision-making processes.
- **PO8: Research and Innovation**
  Conduct research to innovate solutions for business challenges by integrating theory, data, and real-world applications.

Program Specific Outcomes (PSOs)

Program Specific Outcomes (PSOs) represent the skills and knowledge students are expected to acquire specifically through the BBA program that distinguishes it from other programs.

- **PSO1: Practical Application of Business Concepts**
  Graduates will have the ability to apply concepts from core business areas like finance, marketing, operations, and human resources in real-life business settings.
- **PSO2: Industry-Relevant Skills**
  Graduates will be equipped with industry-specific skills, including the use of tools like Tally, Excel, ERP, and business analytics software.
- **PSO3: Managerial Competencies**
  Demonstrate the capacity to manage projects, lead teams, and make data-driven decisions that positively impact organizational performance.
- **PSO4: Business Communication and Soft Skills**
  Graduates will exhibit excellent communication, negotiation, and interpersonal skills that are essential for professional success in business environments.
- **PSO5: Leadership and Strategic Thinking**
  Develop the ability to think strategically and provide leadership to drive business growth and organizational change.

These outcomes ensure that BBA graduates are equipped with the knowledge, skills, and attitudes necessary for a successful career in business and management.

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HOD Management

Department of Psychology

Vision of the Department

Department of Psychology aims to be a leading institution of Psychology in India with strong and vibrant programs that develops exemplary psychologists, be at the cutting edge of scientific research, development, and teaching in psychology and engage in responsive interventions that lead to personal and social transformation.

Mission of the Department

- To nurture students to become intellectually competent through scientific studies of human behavior, emotion, and thought;
- To contribute to public understanding of psychology and its applications in education and beyond;
- To promote human development, learning, health, and well-being through high-quality education, research, and services;
- To cultivate in students the professional ethics, a sense of social responsibility, cultural sensitivity, and good citizenship in a globalized world &
- To engage in high quality and high impact research both within and across disciplines.

Programme Specific Outcomes (PSO) of various Courses in Psychology

After the completion of course students would-

PSO1. Develop the understanding of psychological science with special focus on conceptual and empirical approaches as well as Communicate, articulate and explain key concepts.

PSO2. Understand research methods, design and techniques of data collection.

PSO3. Critically evaluate information, issues and assumptions from different perspectives and apply scientific knowledge to solve problems

PSO4. Understand and apply appropriate quantitative and/or qualitative data analysis techniques and use statistical software also.

PSO5. Inculcate indigenous Indian psychological knowledge through scriptures.

PSO6. Apply psychology to diverse fields i.e.; organization behaviour, health, counselling psychology, and clinical psychology etc.

PSO7. Understand and execute assessment tools related to psychological processes and attributes like personality, intelligence, aptitude etc.

PSO8. Identify, adhere and apply ethical principles to resolve ethical dilemmas.

PSO9. Practically impart psychological knowledge to intervene for mitigating psychological problems and promote positive behaviour and well-being at individual, group, and social level.

PSO10. To cultivate and nurture sensibility and sensitivity various cross cutting issues like gender equity, environmental concerns, sustainable development goals, human values, innovative and entrepreneurship as well as employability skills among students.

DEPARMENT OF ZOOLOGY

B.Sc. in Zoology is an undergraduate Program in Zoology. Zoology is the branch of science which deals with the study of the theoretical part of the general principles of classical as well as modern zoology. The program provides the student with an introduction to the recent advances in zoology in the areas of systematic, evolution, reproduction, development, animal diversity, biochemistry, cytology and animal ecology. This course is offered for candidates who are interested in the study of animals. The Academic functioning of the **department of Zoology was started in 2005**. The department has well equipped laboratory to meet the practical as per the latest syllabus of the university. The minimum time required to complete the course is three years.

Objectives: Imparting quality education in Zoology has been the focus of the department right from its inception. Emphasis is given on education both within and outside the classroom.

The Department is dedicated to fulfill the following objectives through the curricular and co-curricular activities:

♣ To provide students with knowledge of fundamental principles in zoology that will provide a foundation for their later advanced course in more specific biological subjects.

♣ To make students ability to apply basic zoological principles and get knowledge of animal classification schemes.

♣ To elaborate the laboratory and lecture sections of the course.

♣ To provide quality education for self-employment in applied branches of zoology and offering skill based programs.

♣ To inculcate the value based education and entrepreneurial skills among the students.

♣ To create awareness on environmental issues through various activities.

PROGRAMME OUTCOME -

1. Develop competence in basic sciences and in the content of the specific courses that constitute the principal knowledge of their degree.

2. Compare and contrast the characteristics of animals that differentiate them from other forms of life.

3. Acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

4. Understand and be aware of relevant theories, paradigms, concepts and principles of zoology.

5. Understand the structure and functions of cell types

6. Acquire time management and self-management skills.

7. Relate the various abiotic factors with health of living forms and ecosystems.

8. Understand the role of various biomolecules in living systems

9. Apply the knowledge of Zoology to understand the complex life Processes and phenomena.

10. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning.

COURSE OUTCOME -

1. Students familiar with Morphology, Anatomy, and Physiology of different groups of animals.

2. Students develop interest in the field of Taxonomy procedure and nomenclature, which is the basic requirement for classification of different animals, due to diversity among them.

3. Students develops concern regarding environment degradation and takes initiative to Protect and conserve it.

4. Students develop skill and basic knowledge in the Practical work.

5. Students development and impart their knowledge in the field of Applied Zoology.

6. Further opportunities after Graduation the students can opt for Masters in endless career opportunities such as: Masters in Health care sciences, applied zoology and Forensic Sciences.

7. Endless job opportunities: Ecologist, Environmental consultant, Field trails officer, Nature conservation officer, Biomedical Scientists, Research scientists in life sciences.

PROGRAMME SPECIFIC OBJECTIVES -

The college follows Hem Chand Yadav Vishwavidyalaya, Durg syllabus for Zoology. And each paper carries 50 Marks. The prescribed syllabus is as follows:

PSO-01

B Sc. Part -I

Paper-1 Cell biology and Non chordates

1. To understand the structure of the Cell and its functions.

2. To recognize the taxonomy of Non chordates.

3. To identify animals of higher group in Non-chordates.

4. To study the immunity and related health problems.

5. To illustrate the type study in various Non-chordates.

PSO-02

B Sc. Part -I

Paper-2 Chordate & Embryology

1. To study and understand the various system, adaptation and development.

2. To identify animals of higher group in Chordate.

3. To illustrate the types of eggs and cleavage.

4. To gain the concept of fertilization.

5. To study the Parental Care in higher Vertebrate.

PSO-03

B Sc. Part -II

Paper-1 Anatomy and physiology

1. Comparative Knowledge of physiology of vertebrate organ system.

2. To illustrate the histology of endocrine gland.

3. Gain Concepts of comparative biology to explain evolution and success to live in varied environment.

4. To study the physiology of Heart, Cardiac cycle and ECG.

5. To illustrate the structure and Function of Ear and Eye.

PSO-04

B Sc. Part -II

Paper-II Vertebrate endocrinology, reproductive biology, behavior, evolution and applied zoology

1. To understand the social life of different culture and their behavior.

2. To get of medicinal values of honey and economic uses of fishes and various fauna through project work and educational tours.

3. To illustrate physiological adaptations, development, reproduction and behavior of different forms of life.

4. To aware of the development process and reproductive techniques.

5. To develop the concept of evolution of life and experimental evidences.

PSO-05

B Sc. Part -III

Paper-I Ecology, environmental biology, toxicology, microbiology and medical zoology

1. To understand various clinical tests.
2. To study of some common bacterial and viral diseases of man.
3. To aware the knowledge of natural resources, causes of their depletion and their conservation.
4. To apply the knowledge on the human welfare.

5. To illustrate the exposures to toxins and Toxicants.

PSO-06

B Sc. Part -III

Paper-II Genetics, cell physiology, biochemistry, biotechnology and Bio techniques.

1. To develop information in the genomic study.
2. To identify the instruments and their uses.
3. To develop the concept and regulation of metabolism.
4. Knowledge of various techniques used in hematology.
5. To study of Recombinant DNA technology.

B.Sc. MICROBIOLOGY

(First, Second and Third Year)

OBJECTIVES OF THE PROGRAMME:

- A detailed knowledge of structure, function and application of microorganisms.
- Skills in handling microorganisms in the laboratory.
- An understanding of applications of microorganisms in the industry, health-care, environmental protection, food agriculture and research.
- Understanding current trends in microbiology and critically appraising published work.
- The undergraduate program of microbiology is designed to provide knowledge about cellular arrangement, role and functions, metabolic activities, and other various aspects of micro-organisms.
- The living organisms like bacteria, algae, virus, protozoa, etc. are studied under the course of B.Sc. microbiology.
- Not only this, course is designed for making student capable of applying the knowledge of microbiology in related fields like biotechnology, medicine, agriculture etc.

PROGRAMME OUTCOME

The programme of the Bachelors of Science in Microbiology consists of:

- B.Sc. course in Microbiology was introduced during the session 2005-2006. Applied microbiology is among the various subdivisions of microbiology.
- It encompasses a wide area of study, consisting of immunology, epidemiology, microbial metabolism, virology, pathogenic bacteriology, mycology, metabolism, Industrial, Food, Agricultural and Medical microbiology.
- It has many scientific applications in research fields. This exciting programme provides a launch pad into a career that involves working knowledge of scientific research and academics, health clinics and industries.
- This course is aimed at improving the problem solving, critical thinking and analytical reasoning of the students as needed in the case of scientific problems.

- The students are taught to develop the solution to a problem by the application of the correct techniques.

COURSE OUTCOME

Students who graduate with BSc. in (Microbiology) will:

- Have a significant knowledge on various aspects of Microbiology.
- Define/explain within multiple microbiology disciplines the core theories and practices;
- Describe/explain the processes used by microorganisms for their replication, survival, and interaction with their environment, hosts, and host populations;
- Explain the theoretical basis of the tools, technologies and methods common to microbiology; and
- Demonstrate practical skills in the use of tools, technologies and methods common to microbiology, and apply the scientific method and hypothesis testing in the design and execution of experiments.
- **Career options** after B.Sc. Microbiology: Pharmaceutical Industries Universities, Laboratories, Private Hospitals, Research Organizations, Environmental Agencies, Food Industry, Beverage Industry, Chemical Industries, Agriculture Department.

In B.Sc. Microbiology total marking scheme is 150 which is divided in to two paper (Paper-I and Paper-II) and Practical in the following manner:

S.No.	Paper	Marks
1.	Paper I	50 Marks
2.	Paper II	50 Marks
3.	Practical	50 Marks

PROGRAMME SPECIFIC OUTCOME

B.Sc. First Year- It is divided into two papers:

Papers	Title of the paper	Outcomes
Paper-I	**Microbial World and Microbial Technique**	• Understand the contributions of various scientist in microbiology and scope of various branches of it. • Understand the contributions of eminent scientists in the development of microbiology. • Understand and describe systems of Classification • Study of beneficial and harmful microbes. • Understand the basic nutritional requirements of micro-organisms

		• Describe various types of nutrient media for cultivation and isolation of bacteria and Fungi • Understand and classify various micro-organisms such as bacteria, viruses, fungi, algae, protozoans, cyanobacteria etc. • Explain and describe the general features, structure reproduction and economic importance of major groups of microorganisms. • Understand and explain basic Microbial techniques.
Paper-II	**Bacteriology, Virology and Protozoology**	• Understand the Morphology and Ultrastructure of Bacteria. • To understand the Ecological Significance and Economic Importance of Archaea. • Understand the Morphology and ultrastructure of Viruses. • Understand Viral Genome and its forms. • Study the classification and Multiplication of Viruses • Study the Basic Introduction of Protozoa.

B.Sc. Second Year- It is divided into two papers:

Papers	Title of the paper	Outcomes
Paper-I	**Microbial Physiology and Genetics**	• Study of Plasma Membrane and transport across membrane. • Explain typical growth curve of bacteria. • Understand the factors that responsible for bacterial growth. • Understand the Bacterial Cell Division. • Explain and describe the process of replication of DNA. • Describe prokaryotic replication. • Explain fine structure of gene. • Describe prokaryotic transcription. • Describe prokaryotic translation. • Explain mutations and mutagens
Paper-II	**Principles of Bioinstrumentation and Technique**	• Understand and explain the principles, methodology and application of various bio instruments like Microscope, Spectrophotometer, Electrophoresis, Chromatography, and Centrifuge etc.

		• Study of Principle and Requirement of Tissue Culture Technique. • Sequencing of Protein and Nucleic acid. • Understand Radioisotope Technique. • To learn Enzyme purification and essay technique.

B.Sc. Third Year- It is divided into two papers:

Papers	Title of the paper	Outcomes
Paper-I	**Molecular Biology and Genetic Engineering**	• Understand the Model system, concept and Ethical Issues of Molecular Biology and Genetic Engineering. • Study of mutations and mutagens. • Understand the process of replication of DNA and enzyme involved in it. • Understand the regulation of Gene Expression. • Study of DNA repair and restriction. • Understand the Biology of Plasmids. • Study of Plasmids and Phage vectors.
Paper-II	**Environmental and Medical Microbiology**	• Study of Aerobiology. • Understand various Soil types. • Study of Bio fertilizers and understand the Biological Nitrogen Fixation. • Understand and explain the stages of infectious diseases. • Describe various modes by which infections spread. • Describe various methods that can be adopted to control spread of infection in community. • Understand and explain various food-borne, air-borne and water-borne diseases. • Study of Food Spoilage. • Understand Waste treatment, Ex- solid and liquid waste.

Department of Biotechnology

OBJECTIVES OF THE PROGRAMME:

The college follows Hem Chand Yadav University, Durg syllabus for Bachelor of Science (Biotechnology). The objectives of the prescribed syllabus are:

- To discuss the syllabus such that it can attract, enthuse, sustain and promote the interest of learners for selecting biotechnology as their career and make them realize that their choice is intellectually rewarding.
- To provide for mobility of students among institution and different disciplines.
- To increase the awareness of young learners about the abuse to which biotechnological approaches have been subjected by human greed & train them in exploration, identification & evaluation of new techniques related to genetic makeup and its improvements for conservation of nature & natural resources and in the protection of endangered plants, animals species & other biota dependent on them.
- To make provision for improvement in the quality of laboratory and field work for want of which the students are not able to appreciate the beauty and variety of form, structure, function, morphological, physiological, genetic and ecological significance of microbes, plants, animal and their biotechnological importance.
- The objectives of the Programme in Biotechnology is to equip the students to apply knowledge of molecular mechanisms of cellular processes in living systems including microbes, plants, animal and higher order organisms to applied aspects.
- The mission of the Program is to educate an interdisciplinary group of students with backgrounds in biology, biophysics, chemistry, physics, engineering or materials science in the applied biological and chemical sciences of biotechnology for careers in academia, government and industry.

The educational objectives of biotechnology are three fold.

1. To prepare students for careers of constructive service to society in academia, government, industry and health related fields.

2. To engage committed students in areas not experienced in their previous academic lives and to bring them to a baseline that will allow them to conduct translational research, from conceptual design through *in vivo* testing with an eye towards clinical implementation.

3. To provide interdisciplinary research and educational opportunities to solve problems that will improve the quality of life for those suffering from health-related diseases and disorders.

COURSE OUTCOME (CO):

Upon completion of this course students will be:

- Cognitive Knowledge: To provide education that leads to comprehensive understanding of the principles and practices of biotechnology.
- Information and Computer Literacy: To educate and make them up to date with the current scientific literature, computer programs and web information.
- Experimental Skills: To provide broad based training in technical skills in methods of biotechnology.
- Critical Thinking: To empower students with the ability to think and solve problems in the field of biotechnology.
- Scientific Communication: To ensure students are able to effectively communicate with biotech and other interdisciplinary professionals.
- Professional Attitude: To produce responsible biotechnologists that can work within the interdisciplinary framework of biotechnology and related fields.
- To acquire knowledge relevant to microbes and its industrial importance with practical knowledge.
- To make aware the application of these studies to become entrepreneur.
- To become employee of related scientific industries R & D labs as a research associate or scientist.
- To become biotechnologist.
- To appear different competitive examination conducted at national and state level.
- To become teacher in educational institute.
- After course completion go for higher studies like Post graduation, Ph.D. , Post DOC and become a professor in higher education.
- To become laboratory technician.

- **SCHEME OF EXAMINATION**

BIOTECHNOLOGY:- Paper I- 50 Marks Time -3 Hours
Paper II-50 Marks Time -3 Hours
Practical- 50 marks Time -4 Hours

Name of Programme	Program Outcome(PO)	Program Specific Outcome(PSO)
	B. Sc. Part-I	
B. Sc. Subject- Biotechnology	• The student would be able to comprehend the structures of the major classes of macromolecules. • Students understand :Basic Structure and metabolism of Biomolecules.	**B. Sc. Biotechnology Part-I (BIOCHEMISTRY, BIOSTASTICS AND COMPUTERS)** • Explain the definition, classification, biological function, structure and interactions of Biomolecules. • Perform the statistical analysis of the experimental outcomes.
	• To make the student to understood the concept of cell and their activities. • Student will understand the concept of genes and their behaviour. • The student would be able to comprehend the cell organelle, cell membrane. • The student will be able to identify microbes using modern techniques	**B. Sc. Biotechnology Part-I (Paper-II- CELL BIOLOGY, GENETICS AND MICROBIOLOGY)** • Understanding the basic microbial characteristics, structure, reproduction and economic importance of Bacteria, Virus, Mycoplasma, algae, fungi. • Discuss and differentiate the basic structure and function of cell components in prokaryotes and eukaryotes cells. • Describe the structure and Classification, staining, culturing, physiology, of microorganisms. • Re state the various types of gene interactions and genetic recombination
	B. Sc. Part-II	
	• Understand what genes are • How they are inherited • How they control cellular activity and they respond to environment • Understanding of chemical and molecular processes that occur in and between cells.	**B. Sc. Biotechnology Part-II (Paper-I- MOLECULAR BIOLOGY & BIOPHYSICS)** • Explain the concepts of DNA replication, DNA damage and repair, and gene expression in eukaryotic and prokaryotic organisms. • The principle concepts in using analytical and preparatory techniques. • Identify and differentiate working principle, instrumentation and applications of various bio-analytical instruments. • Reproduce and design an experiment with step-by-step instructions to address a research problem or bio-analytical practical/project.

	• Acquire knowledge of Manipulation of genes, Transfer techniques, Expression systems and methods of selection. • To learn Store and Retrieve drug related information using online tools. • To know the techniques of DNA, RNA isolation. • Techniques to be learn like gel electrophoresis, spectroscopy, centrifugation etc. • Student studied the bioinformatics tools and its application in drug discovery and more.	**B. Sc. Part-II Paper-II- (RECOMBINANT DNA TECHNOLOGYAND GENOMICS)** • Explain the basic principles and, the tools and techniques of Genetic engineering and recombinant DNA technology. • Design, perform, and analyze results of experiments using basic molecular biology methodologies and recombinant DNA techniques, including agarose and polyacrylamide gel electrophoresis, restriction enzyme digestion, bacterial transformations, plasmid DNA protein expression, PCR, microarray. • Describe the applications in various fields. • Debate on ethical issues concerned with Genetic engineering • Perform multiple sequence and pair-wise alignment using bioinformatics tools.
	B. Sc. Part-III	
	• Gain knowledge of Crop development, Callus culture, Biotechnological applications of plants. • Apply the practical skills for entrepreneurial development.	**B. Sc. Part-III (Paper-I- Plant, Environment and Industrial Biotechnology)** • Illustrate the various aspects of Biotechnological applications in Fermentation Industries. • Describe the concept of pollution management. • Apply the concepts of Biotechnology in Environmental Management. • Explain the concepts of intellectual property rights
	• Understood the principles of immunology. • Understood methods of studying immune reactions • On successful completion of the subject the student understand the concept of immunity and vaccination.	**B. Sc. Part-III(Paper-II immunology)** • Explain the concepts of innate and adaptive immune response and techniques for clinical diagnosis. • Apply basic techniques for identifying antigen antibody interactions. • Describe which cell types and organs present in the immune response. • Illustrate various mechanisms that regulate immune responses and maintain tolerance • Recall the success of various transplant procedures. • Elucidate the reasons for immunization and aware of different vaccination.

PROGRAMME OUTCOMES (PO)

P01: Students who choose B.A/B.Sc with Mathematics as one subject develop the ability to think critically, logically and analytically and hence use mathematical reasoning in everyday life. Pursuing a degree in mathematics will introduce the students to a number of interesting and useful ideas in preparations for a number of mathematics careers in education, research, government sector, business sector and industry.

PO2: The programme covers the full range of mathematics, from Calculus and Algebra. The course lays a structured foundation of Calculus , Algebra, Differential equations,Number theory Linear Algebra and Graph theory.

PO3: Skill enhancement Courses enable the student acquire the skill relevant to the main subject. Choices from Discipline Specific Electives provides the student with liberty of exploring his interests within the main subject.

PO4: The well-structured programme empowers the student with the skills and knowledge leading to enhanced career opportunities in industry, commerce, education, finance and research.

PO5: Calculus serves as a foundation for advanced mathematics , such as phyics and engineering. It provides a bridge between algebra and more complex mathematical concepts.

COURSE OUTCOMES(CO):

Course : Calculus (Math-1T)

Course Objectives: The primary objective of this course is to introduce the basic tools of calculus and to understand the extension of the studies of single variable differential calculus to functions of two or more independent variables.

Course Outcomes: This course will enable the students to-

i) Learn the conceptual variations when advancing in calculus from one variable to multivariable discussions.

ii) Draw curves in a plane using its mathematical properties in the different coordinate systems of reference.

iii) Learn the applications of mean value theorem and Taylor's theorem.

iv) Realize importance of Green , Gauss and Stoke's theorems in other branches of mathematics.

Course : Algebra (Math-2T)

Course Objectives: The objective of the course is to introduce the theory of groups and their homomorphism & isomorphisms.

Lagrange's theorem and its applictions . Concept of space,rank and nullity.

Course Outcomes: The course will enable the students to-

i) Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, etc;

ii) Explain the significance of the normal, subgroups, and factor groups.

iii) Learn the applications of matrices to computer graphics and search engines.

iv) Find eigen values and corresponding eigen vectors faor a squar matrix.

Course : Analylis

Course Objectives: The course will develop a deep and rigorous understanding of functions real numbers as a complete order field. These concepts has wide range of applications in real life scenario.

Course Outcomes: This course will enable the students to-

i) Understand many properties of the real line and learn to define sequence in terms of functions from a subset of Natural no's to Real line.

ii) Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.

iii) Apply the ratio, root and alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.

iv) The geometrical properties of continuous functions on closed and bounded intervals.

v) Sequence and series of Real valued functions along with power series and radius of convergence.

course: Advanced Calculus

Course objectives: equations Evaluation of length, areas& volumes of different curves of revolution. The partial derivatives of several variable functions. Concept and application of Laplace transforms. Fourier series for periodic functions. Classification of second order partial differential.

Course Outcomes: This course will enable the students to-

i) Evaluate the improper integrals using beta and gamma functions.

ii) Find the Maxima and Minima of several variable functions.

iii) Solve the differential equations using Laplace transform techniques.

iv) Find the Fourier series of the periodic functions.

v) Solve one dimensional heat equation, wave equation using method of separation of variables.

course: Mechanics

Course objective: To understand the concept of basic in mechanics like motion of paricles , kepler's law of motion, simple harmonic motion, null lines and planes.

Course Outcomes: This course will enable the students to-

i) Gain knowledge about forces in three dimension, motion of particles of varying mass.

ii) Understand analytical conditions of equilibrium, virtual work & catenary.

iii) Find velocities and acceleration in tangential and normal directions.

iv) Define Poinsot's central axis.

Course : Differential Equations

Course Objectives: The main objectives of this course are to introduce the students to the exciting world of Differential Equations (Ordinary Differential equations and Partial Differential equations) and their applications.

Course Outcomes: The course will enable the students to-

i) Understand basic concepts of Differential Equations

ii) Solve first order linear and non-linear differential equation and linear differential equations of higher order using various techniques.

iii) Prove Lagrange's solution&Charpit's general method of solution.

iv) Variation problems with moving boundaries, Jacobi & Legendre conditions.

Course:Abstract Algebra

Course objectives: The focus of the course will be the study of certain structures called groups, rings, fields and some related structures. This course aims to provide a first approach to the subject of algebra, which is one of the basic pillars of modern mathematics. In particular to study in details the Sylow theorems and polynomials rings.

Course outcomes: The course will enable the students to-

i) The student will be able to define the concepts of group, ring, field, and will be able to readily give examples of each of these kinds of algebraic structures.

ii) The student will be able to define the concept of subgroup and will be able to determine (prove or disprove), in specific examples, whether a given subset of a group is a subgroup of the group.

iii) The student will be able to define and work with the concepts of homomorphism and isomorphism.

iv) The student will be able to apply the basic concepts of field theory, including field extensions and finite fields.

Course : principles of computer science

Course objectives: The curriculum's main objectives are to impart students with an understanding of the basics of computer science, to develop proficiency in the practice of computing, and to prepare them for continued professional development. Learning outcomes for Computer Science majors are listed below.

Course outcomes: The course will enable the students to-

Explore algorithmic approaches to problem solving. Ability to analyze a problem and devise an algorithm to solve it.

PROGRAMME OUTCOME(PO)

GRADUATION PHYSICS

❖ **PO1. Applied Knowledge:**
Apply their knowledge of physics across a range of different fields, with in depth knowledge in at least one area of study. It will make student able for demonstrating and understanding the local and global contexts in which physics is practiced.

❖ **PO2.Practical Information:**
Student will be able to understand and resolve routine problems which they learn during their studies.

❖ **PO3. Team work:**
In lab work and their undergraduate classes, they learn to live in groups. They can work effectively in groups to meet a shared goal with people whose disciplinary and cultural backgrounds differ from their own.

❖ **PO4. Communication skill:**
Student share their views and science and technology ideas with their friends and teachers during their education. This will be helpful for enhancing their communication skill.

❖ **PO5. Professional and ethical behavior:**
Demonstrative personal and professional integrity by respecting diverse point of view and intellectual contribution of others.

❖ **PO6. Problem solving and critical thinking:**
Students can critically evaluate ideas and arguments by gathering relevant information, assessing its credibility and synthesizing evidence to formulate a position.

❖ **PO7. Environment Sensitivity :**
To aware young ones towards environment and sustainability and sustainable development.

POST GRADUATION PHYSICS

❖ **PO1. Knowledge:**
After completion of masters in physics student can apply their expertise to solve novel and emerging problems in scientific world.

❖ PO2. Creative researches:

Students will be prepare to solve research problem, apply research methods, tools for data collection, analyze and interpreting it.

❖ PO3. Professional Ethics:

Expected to broaden their professional foundations through activities such as internships, fellowships, teaching, presentation and project work. They aware about scope and opportunities in the field of different branches of physics.

❖ PO4. Originality:

Student can perform original work in the field of physics or complete a substantial project related to the field of basic and advance physics.

❖ PO5. Skills:

Student can apply analytical models and critical, reasoning propellers to calculate evidence, select among alternatives and generate creative options by using their technical skill. Learn effective communication skills in oral & written form. Communicate their research clearly and professionally in both written and oral forms appropriate to the field through publications, conference, research papers, seminars etc. Investigate, design and apply appropriate methods to solve problems in science, mathematics and technology by using their skill.

❖ PO6. Proficiency in technology:

Students will be proficient with modern technologies and aware with its significance in the modern world. They will gain perfection in their field by using technology.

❖ PO7.Communication:

Communicate effectively on scientific achievements, concepts and recent developments with experts and with social environment. Able to prepare and write reports, documents. Perform effective presentations in oral and written form.

❖ PO8: Environment and sustainability:

Understand the impact of the solutions in ethical, societal and environmental contexts and can demonstrate the knowledge for their sustainable development.

❖ PO9: Teamwork:

Recognize the opportunities and contribute positively in collaborative and scientific research. They exchange their ideas with researchers of other disciplines also.

PROGRAMM SPECIFIC OUTCOMES(PSO)

- To provide quality education to the students in a creative and stimulating environment.
- To promote research work and skill with technology.
- To provide a creative atmosphere for the preparation of competitive exams viz.NET/SET/PSC

❖ **PSO1:** Students are expected to acquire basic knowledge of modern physics, including the major premises of classical and quantum mechanics, electrodynamics, electromagnetic theory, and optoelectronics.

❖ **PSO2:** Students are also expected to develop their written and oral communication skills in optical fibre, communicating physics related topics.

❖ **PSO3:** Students would learn how to design and conduct an experiment (or series of experiments), projects demonstrating their understanding of the scientific method and processes.

❖ **PSO4:** Students are expected to understand the analytical methods required to interpret and analyze results and draw conclusions as supported by the experimental data or existing theories.

Shri Shankaracharya Mahavidyalaya Junwani

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Shri Shankaracharya Mahavidyalaya
Junwani, BHILAI (C.G.)

COURSE PROFILE (B.Sc. PHYSICS)

Class	Paper	Name of the paper
B.Sc. I Year	Paper I	Mechanics, Oscillations and Properties of Matter
	Paper II	Electricity, Magnetism and Electromagnetic Theory
B.Sc. II Year	Paper I	Thermodynamics, Kinetic Theory and Statistical Physics
	Paper II	Waves, Acoustics, and Optics
B.Sc. III Year	Paper I	Relativity, Quantum Mechanics Atomic Molecular and Nuclear Physics
	Paper II	Solid State Physics, Solid State Devices and Electronics

COURSE OUTCOMES

PAPER	PAPER NAME (PAPER CODE)	OUTCOMES
		After completion of the course the student should be able to
B.Sc. I		
PAPER I	MECHANICS, OSCILLATIONS AND PROPERTIES OF MATTER	CO1 Understand basic concept of Newtonian Mechanics and apply it on other physical system.
		CO2 Understand Rigid Body Motion, Rotation motion and Simple Harmonic Oscillation.
		CO3 Understand Lissajous figure and its application, derive differential equation and its solution for damped and forced harmonic Oscillator.
		CO4 Understand the basic theory apply in CRO.
		CO5 Understand the theory and application of Elasticity and Viscosity.
PAPER II	ELECTRICITY, MAGNETISM AND ELECTROMAGNETIC THEORY	CO1 Able to formulate equation to address force between charged particles.
		CO2 Calculate energy and intensity of electrostatic field for a given charged particles/ group of charges
		CO3 Understand Gauss's law and its implication in problem solving.

PAPER II	**CLASSICAL MECHANICS**	CO–1. Students will be able to know the effect of forces during static conditions and understand the true nature of Newtonian mechanics, Lagrangian and Hamiltonian approaches in classical mechanics.
		CO–2. Apply Langragian Equation and solve Kinematics and Dynamics of rigid body in detail and ideas regarding Euler's equations of motion.
		CO–3. . Reduce dynamics of many body problem to single body and apply it to solve Planetary Motions .
		CO–4. Understand Principle of least action and transformations from one set to another and implement it to theory of small oscillations .
PAPER III	**ELECRODYNAMICS AND PLASMA PHYSICS**	CO–1. Students will be able to know review and illustrate Lorentz transformation of space and time and Maxwell's field equations in terms of four vectors, electromagnetic field tensor, Lienard - Wiechert Potential.
		CO–2. Explain Motion of charged particles in E-M field and theories related to Larmour's formula, relativistic generalization of Larmour's formula, Bremrstrahlung radiation, Synchrotron Radiation, Cerenkev radiation, Abraham- Lorentz formula. Get Idea of Plasma Production, theories related to application of EM fields and appreciate the difficulties related to it.
		CO–3. Explain Phase Space for Single particle and many particle phase space ,collisionless Boltzman equation,E and B field.
PAPER IV	ELECTRONICS	CO–1. Students will be able to understand op-amp,transistor and diode characteristics and apply it to design electronic circuits and memory devices of desired configurations. After successful completion of the course the student is expected to know and discuss differential amplifier circuits.
		CO–2. Apply knowledge of OPAMP and analyse its block diagram and different Configurations. Understand and explain Summing Amplifier, Differentiator, Integrator, Clipping Clamping circuits, Multi-vibrators.
		CO-3 Describe and discuss applications of OP-AMP as oscillators in all configurations.

		CO–4. . Able to recognize microprocessor 8085 and its basic working along with familiarization of all type of memory devices.
LAB COURSE I-A	GENERAL AND OPTICS	Students are expected to understand various theory and principles concerned with mechanics, optics and semiconductor electronics and will be able to following in connection of the same.
LAB COURSE I-B	ELECTRONICS	Design and resolve circuits for electronic applications. Record data as required by the experimental objectives. Analyse recorded data and formulate it to get desired results. Interpret results and check for attainment of proposed objective.

SYLLABUS

M.Sc.-2nd Semester

Paper	Name of Paper
Paper I	Quantum Mechanics-I
Paper II	Statistical Mechanics
Paper III	Electronic and Photonic Devices and Optical Modulators
Paper IV	Computational methods and Programming

COURSE OUTCOME

At the end of this course, a student will have developed ability to:

PAPER	PAPER NAME	COURSE OUTCOME
PAPER I	QUANTUM MECHANICS-I	CO-1. Students will be able to get familiarize with basic non-relativistic quantum mechanics, old quantum theory, interpretation of wave function, uncertainty principle in quantum mechanics and commutation relations

		CO-2. Appreciate Dirac delta function, box normalization, Hilbert space, matrix mechanics, Schrodinger, Heisenberg and interaction pictures, particle in a box,tunneling through a potential barrier, linear harmonic oscillator.
		CO-3 Develop the idea of symmetry in space and time, spherical harmonics, angular momentum, addition of angular momenta and Clebsch-Gordon coefficients.
		CO-4. Understand the basic concepts of hydrogen atom in quantum mechanics, time independent perturbation theory and its applications to harmonic oscillator,Zeeman effect and Stark effect.
PAPER II	**STATISTICAL MECHANICS**	**CO-1.** Students will be able to classify a system into canonical, micro canonical, Grand Canonical ensembles and write partition function for them.
		CO-2. Describe Gibbs's paradox, Phase space Liouvelle's theorem, Maxwellian distribution from canonical distribution and understand transition to Quantum statistical mechanics.
		CO-3 Derive and discuss Virial equation , cluster expansion for a classical gas, the Ising model in one dimension, exact solution of Ising model in one dimensions and Landau's Phenomenological theory of phase transition.
		CO-4. Summarize and outline thermodynamic fluctuations spatial correlation in a fluid, Langevin's theory of the Brownian motion, Einstein Relation and Expression for mobility(Nernst relation) Fokker – Planck equation and Fluctuation dissipation theorem.
PAPER III	**ELECTRONIC AND PHOTONIC DEVICES AND OPTICAL MODULATORS**	**CO-1.** the student is expected to learn and apply different bipolar devices, thyristers, diac, triac, UJT and SCR.
		CO-2. Students learn to different unipolar devices,JFET, MOSFET,MESFET,MIS and MOS diodes.
		CO-3. Students learn Special microwave ,photonic and power devices.

PAPER IV	COMPUTATIONAL METHODS AND PROGRAMMING	**CO-1** After completion of the course, the student is expected to learn and apply different numerical methods such as Newton raphson for physical problems.
		CO-2. Understand and analyze data by interpolation and curve fitting etc.
		CO-3. Learn and solve ODE using Picard's Method, Taylor Series expansion .
		CO-4 Apply Newton's forward and backward difference formula , Stirling's formula for numerical differentiation .
		CO-5 Use trapezoidal and Simpson's rule for numerical Integration.
LAB COURSE II-A	NUMERICAL ANALYSIS & COMPUTER PROGRAMMING	Understand the basics of a structured and object oriented programming language and apply the program for the purpose of numerical computations
LAB COURSE II B	DIGITAL ELECTRONICS & MICROPROCESSOR	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics. To understand and examine the structure of various number systems and its application in digital design. Describe the architecture & organization of 8085 & 8086 Microprocessor. Understand and classify the instruction set of 8085/8086 microprocessor and distinguish the use of different instructions and apply it in assembly language programming.

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